

PR. FALLING CREEK 83(1)A

525

CONFIDENTIAL

GEOLOGY OF THE FALLING CREEK PROPERTY

LICENSES 6370-6386, 6388-6390, 6393-6399, 6402-6428
in the Peace River Land District

CENTERED ON 55° 26'N 122° 05'W
EXTENDED FROM 55° 23'N to 55° 32'N LAT. AND
121° 55'W to 122° 15'W LONG

ON NTS SHEETS 930/8 (primarily)
930/9, 93P/5.

LICENSES OWNED AND OPERATED BY

ESSO RESOURCES CANADA LTD.
237 - 4th Avenue S.W.
Calgary, Alberta.
T2P 0H6

WORK COMPLETED BETWEEN MAY 1983 and AUGUST 1983

GEOLOGICAL BRANCH
ASSESSMENT REPORT
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ABSTRACT

The Falling Creek property consists of 50 licenses covering 14,694 hectares; it lies within the Peace River Coalfield of Northeast British Columbia.

The property occurs within the fold dominated Foothills subprovince of the Northern Rocky Mountains and is underlain by Lower Cretaceous sediments of the Crassier and Ft. St. John Groups. This geologic setting is the result of a complex interaction of tectonic and sedimentary regimes developed during late Jurassic to early Tertiary time.

The Crassier Group comprises conglomerate, sandstone, siltstone, mudstone, carbonaceous mudstone and coal; it is divided into three formations, the Brenot, Dresser and Gething. The Gething Formation is the most significant coal bearing formation within the property and the Pine Pass area of northeast British Columbia. Coal seams are most abundant in the upper half of the Gething Formation; the thickest, most consistent seam occurs within the first ninety meters of the formation.

Remote areas of the Falling Creek property were explored during the 1983 program, to delineate additional reserve areas.

A helicopter supported diamond drill was utilized to test the stratigraphy and continuity of coal seams within the Gething Formation. The drill holes and core were geophysically and geologically logged, and coal seams were analyzed for detailed quality data.

The coal is ranked as low to medium volatile bituminous, and is considered to be a thermal blend coal. Extensive drilling is needed to increase the certainty of indicated coal reserves in the southern portion of the property.

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SOME LOGS MISSING

1.0 INTRODUCTION

1.1 1983 Field Program Objectives

The objective of the 1983 program was to delineate reserve areas in the remote portions of the property.

To assess potential areas, the program comprised drilling and mapping and was designed to:

1. test the continuity and correlation of coal seams;
2. collect coal samples for detailed coal quality analyses;
3. define and correlate the stratigraphy and structure.

1.2 Location and Access

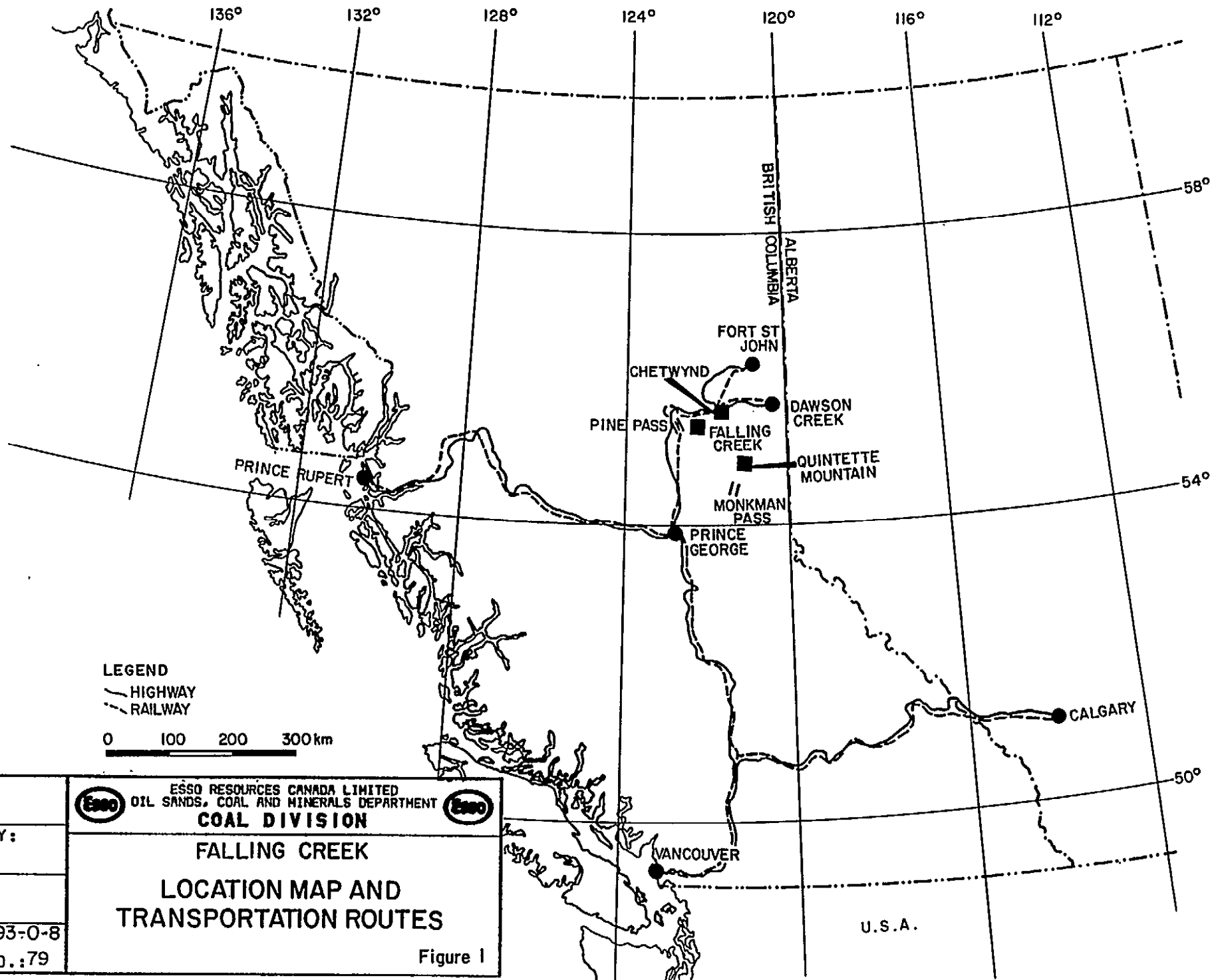
The Falling Creek licenses are situated in the Pine Pass region of northeast British Columbia and lie within the Peace River Land District (Figure 1).

The main property, called Falling Creek, consists of 49 licenses and is centered on 55° 26' N Latitude, and 122° 5' W Longitude. It extends between 55° 23' N - 55° 32' N Latitude and 121° 55' W - 122° 15' W Longitude. The licenses lie within NTS units 93 0/8, 93 0/9, 93 P/5 (Figure 2 and Table 1).



One other license, known as Willow Creek, is within NTS unit 93 0/9 at 55° 19' N Latitude, 122° 15' W Longitude.

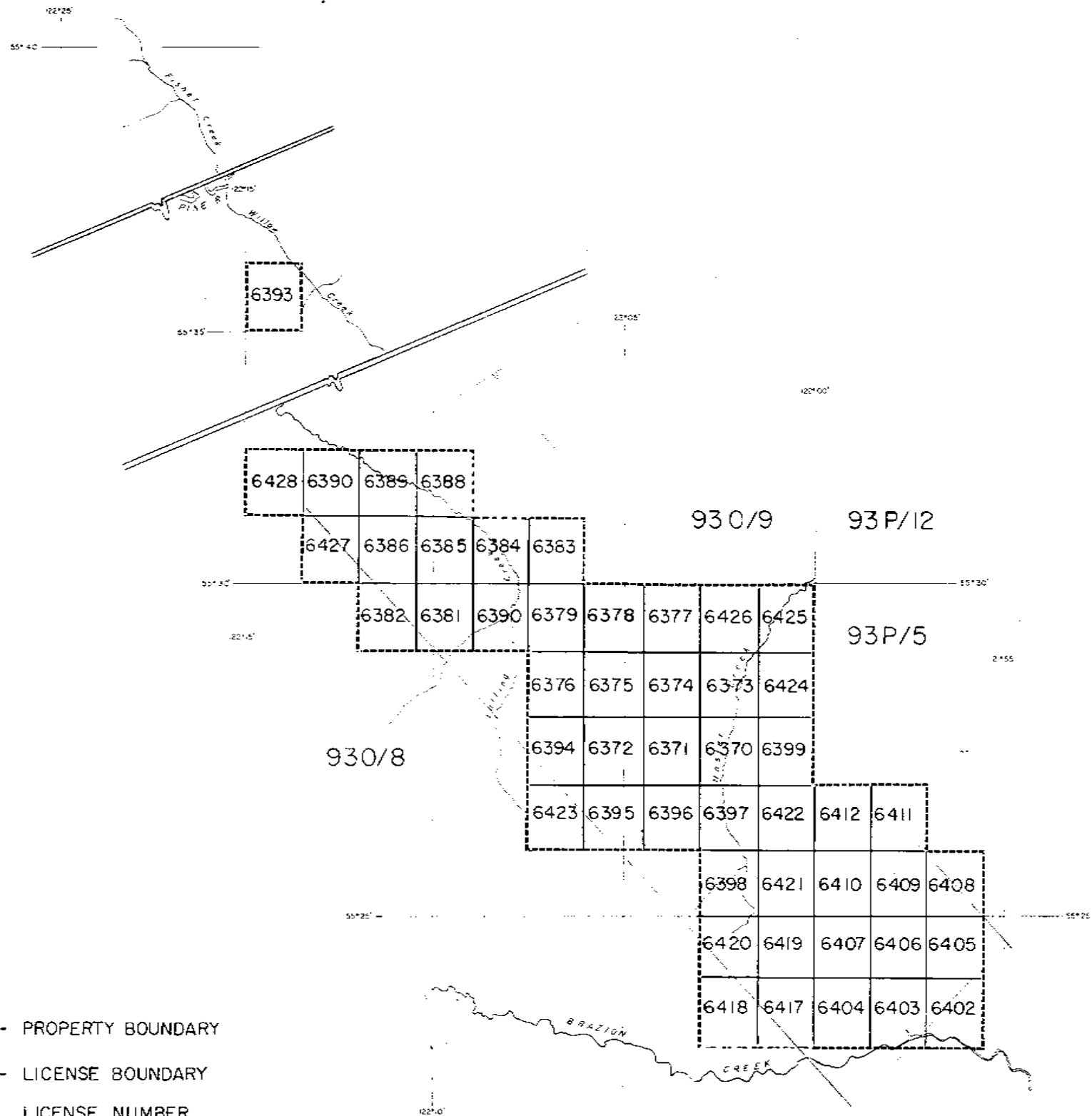
The 50 licenses held by Esso Resources Canada Limited cover 14,694 hectares.

The Falling Creek property is approximately 50 kilometers (km) southwest of Chetwynd, B.C. Chetwynd is located 100 km west of Dawson Creek and 310 km northeast of Prince George, B.C. The B.C. Railway line and Highway 97 connect Chetwynd with both centres.

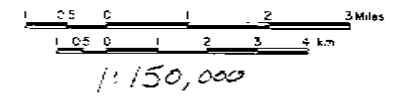
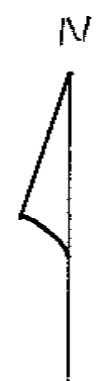


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 ESSO RESOURCES CANADA LIMITED OIL SANDS, COAL AND MINERALS DEPARTMENT 
COAL DIVISION FALLING CREEK LOCATION MAP AND TRANSPORTATION ROUTES
Figure 1



- - - - - PROPERTY BOUNDARY
 _____ LICENSE BOUNDARY
 6392 LICENSE NUMBER



ESSO MINERALS CANADA
 COAL DEPARTMENT
**FALLING CREEK
 PROPERTY DEFINITION**
 Figure 2 ✓

TABLE 1

Description of coal licenses granted to Esso Resources in the Falling Creek area of the Peace River Land District, B.C.

Coal licenses granted May 24, 1980.

<u>License Number</u>	<u>Description</u>	<u>Hectares</u>
	<u>MAP 93 0/8</u>	
6370	Block I, Units 43, 44, 53, 54	294
6371	Units 45, 46, 55, 56	294
6372	Units 47, 48, 57, 58	294
6373	Units 63, 64, 73, 74	294
6374	Units 65, 66, 75, 76	294
6375	Units 67, 68, 77, 78	294
6376	Units 69, 70, 79, 80	294
6377	Units 85, 86, 95, 96	294
6378	Units 87, 88, 97, 98	294
6379	Units 89, 90, 99, 100	294
6380	Block J, Units 81, 82, 91, 92	294
6381	Units 83, 84, 93, 94	294
6382	Units 85, 86, 95, 96	294
	<u>MAP 93 0/9</u>	
6383	Block A, Units 9, 10, 19, 20	294
6384	Block B, Units 1, 2, 11, 12	294
6385	Units 3, 4, 13, 14	294
6386	Units 5, 6, 15, 16	294
6388	Units 23, 24, 33, 34	293
6389	Units 25, 26, 35, 36	293
6390	Units 27, 28, 37, 38	293
6393	Block G, Units 9, 10, 19, 20	293

TABLE 1 (Continued)

<u>License Number</u>	<u>Description</u>	<u>Hectares</u>
<u>MAP 93 O/8</u>		
6394	Block I, Units 49, 50, 59, 60	294
6395	Units 27, 28, 37, 38	294
6396	Units 25, 26, 35, 36	294
6397	Units 23, 24, 33, 34	294
6398	Units 3, 4, 13, 14	294
6399	Units 41, 42, 51, 52	294
<u>MAP 93 P/5</u>		
6402	Block E, Units 65, 66, 75, 76	294
6403	Units 67, 68, 77, 78	294
6404	Units 69, 70, 79, 80	294
6405	Units 85, 86, 95, 96	294
6406	Units 87, 88, 97, 98	294
6407	Units 89, 90, 99, 100	294
6408	Block L, Units 5, 6, 15, 16	294
6409	Units 7, 8, 17, 18	294
6410	Units 9, 10, 19, 20	294
6411	Units 27, 28, 37, 38	294
6412	Units 29, 30, 39, 40	294
<u>MAP 93 O/8</u>		
6417	Block H, Units 61, 62, 71, 72	294
6418	Units 63, 64, 73, 74	294
6419	Units 81, 82, 91, 92	294
6420	Units 83, 84, 93, 94	294
6421	Block I, Units 1, 2, 11, 12	294
6422	Units 21, 22, 31, 32	294
6423	Units 29, 30, 39, 40	294
6424	Units 61, 62, 71, 72	294
6425	Units 81, 82, 91, 92	294
6426	Units 83, 84, 93, 94	294

TABLE 1 (Continued)

<u>License Number</u>	<u>Description</u>	<u>Hectares</u>
	<u>MAP 93 0/9</u>	
6427	Block B, Units 7, 8, 17, 18	293
6428	Units 29, 30, 39, 40	<u>293</u>
	TOTAL	<u>14,694</u>

50 - Total Number of Licenses

The southern portion of the property is accessed by the Hasler Creek forestry road which joins Highway 97, 24 km west of Chetwynd. Throughout the southern portion of the property abandoned logging roads exist in clear cut areas. Occasional seismic lines cross cut the property. The northern portion of the property is accessible only by helicopter. The Willow Creek license is accessed from a bush road off Highway 97, 40 km west of Chetwynd.

1.3 Geography

The Falling Creek property lies within the physiographic region of the Rocky Mountains foothills (Figure 3). The foothills in this region trend northwest-southeast and have considerable relief. Elevations range from 900 to 2000 m; treeline occurs at 1700 m.

Because the property is heavily forested, outcrop exposure is sparse, and is best observed in creeks, road cuts, logged clear cuts and exposed ridges above treeline.

1.4 Previous Work

The earliest coal exploration in the area was conducted by the Coal Division of the B.C. Department of Lands and Forests between 1946 and 1951. The objective of the exploration program was to estimate mineable coal reserves near the proposed railway route through the Peace River District. The program consisted of geological mapping, trenching and diamond drilling. A report on the program was completed by N.D. McKechnie (McKechnie, 1955).

Between 1972 and 1977, Pan Ocean Oil Ltd. held coal licenses over the area presently leased to Esso Resources Canada Limited, and completed eight drill holes now located within the Falling Creek property. Pan Ocean mapped most of the property as the lower Gething Formation. The licenses were relinquished by Pan Ocean and

subsequently acquired and then relinquished in 1980 by Manalta. Esso Resources acquired 59 licenses in May, 1980, and named the property Falling Creek.

During the summer of 1980 Esso Resources Canada Limited commenced preliminary geological mapping of the property and tested the stratigraphy with one rotary drill hole. Five licenses were dropped following the recommendations of the summer's work.

In the summer of 1981, a truck and helicopter supported program consisted of mapping, trenching and drilling. The major emphasis of the program comprised detailed geological mapping at a 1:10,000 scale. The mapping gave definition to the most prospective coal areas. Three backhoe trenches and three diamond drill holes were completed to test the stratigraphy and the extent of coal seams. The diamond drill holes were geologically and geophysically logged. Proximate analysis was completed on coal samples from the drill core as well as from outcrop and trenched seams.

The 1982 field program was two phased, comprising a truck and helicopter supported geological mapping program and a truck mounted drill program. The mapping program, at a scale of 1:10,000, concentrated on remote areas previously unmapped. A truck mounted downhole hammer drill was used to complete fifteen drill holes averaging 200 m in depth; the drill holes tested the stratigraphy and continuity of coal seams. Selected coal seams over one meter thick were sampled for proximate analyses and vitrinite reflectance. Gamma ray, neutron, density, caliper and dipmeter geophysical logs were run on every hole. Most drill holes were located in areas with existing access, however, caterpillar work was needed to upgrade logging and seismic trails and to construct two new trails. Drill sites adjacent to the Hasler Creek forestry road and all new trails were reclaimed according to government regulations.

1.5 Work Completed by Esso Resources Canada Limited in 1983

The 1983 program consisted of geological mapping at a scale of 1:10,000 and a helicopter supported diamond drill program. Field mapping was undertaken to resolve stratigraphic and structural problems and to pin-point exact locations of drill holes.

A Boyles 56A diamond drill was used to recover a total of 2018.8 metres of HQ core in eight drill holes, ranging in depth from 77 to 384 metres (Table 2). All drill holes and core were geophysically and geologically logged. The geophysical logs consisted of natural gamma, density, neutron, caliper, deviation, and dipmeter. Selected coal seams were analyzed for vitrinite reflectance, maceral determination and coal quality.

Drilling and geophysical logging equipment was moved between sites with a Bell 205/204 helicopter. The drill rig was accessed daily with a Bell 206 helicopter.

All drill sites required preparation and clean-up. At each site, trees were cut and bucked according to government regulations. Spruce slash encountered at site 83-21 was disposed of according to government regulations.

Drill holes 83-21, 83-17, 83-15 and 83-14 are stored at the Charlie Lake core storage facility. The remaining holes are stored in Chetwynd.

TABLE 2LIST OF WORK COMPLETED 1983

	<u>Licenses</u>
Drilling - Helicopter Supported	
Eight Licenses	6376, 6377, 6378, 6381, 6382, 6412, 6423, 6427
Logging, Sampling and Testing	
Eight Licenses	6376, 6377, 6378, 6381, 6382, 6412, 6423, 6427
Preparation and Clean Up of Drill Sites	
Eight Licenses	6376, 6377, 6378, 6381, 6382, 6412, 6423, 6427
Geological Mapping	6376, 6377, 6378, 6373, 6379, 6374, 6381, 6382, 6385, 6386, 6412, 6411, 6399, 6422, 6410, 6421, 6418, 6417, 6404, 6402, 6423, 6395, 6394, 6427, 6420, 6398, 6396, 6371

TABLE 3

DRILL HOLES COMPLETED 1983

<u>LIC #</u>	<u>Drill Hole Number</u>	<u>Location UTM</u>	<u>Elevation Meters</u>	<u>Depth Meters</u>	<u>Type of Sample</u>	<u>Geophysical Logs</u>
6377	83-14	58,975 m E 49,250 m N	1335	336.11	HQ Core	Coal Combination Sonde (CCS) (includes Gamma Ray, Density, Cali- per) Neutron-Neutron, Dip Meter
6381	83-15	53,480 m E 50,019 m N	1185	205.96	HQ Core	CCS, Neutron-Neutron, Dipmeter
6382	83-16	51,500 m E 50,215 m N	1215	77.31	HQ Core	CCS, Neutron-Neutron, Dipmeter
6427	83-17	49,115 m E 51,785 m N	1190	384.7	HQ Core	CCS, Neutron-Neutron, Dipmeter
6376	83-18	56,265 m E 48,275 m N	1282	201.77	HQ Core	CCS, Neutron-Neutron, Dipmeter
6378	83-19	57,175 m E 49,110 m N	1292	251.66	HQ Core	CCS, Neutron-Neutron, Dipmeter
6423	83-20	56,100 m E 43,960 m N	1575	232.97	HQ Core	CCS, Neutron-Neutron, Dipmeter
6412	83-21	64,492 m E 43,960 m N	1390	325	HQ Core	CCS, N-N, Dipmeter
				Total Depth = 2,015.08		

2.0 STRATIGRAPHY

2.1 Regional Setting

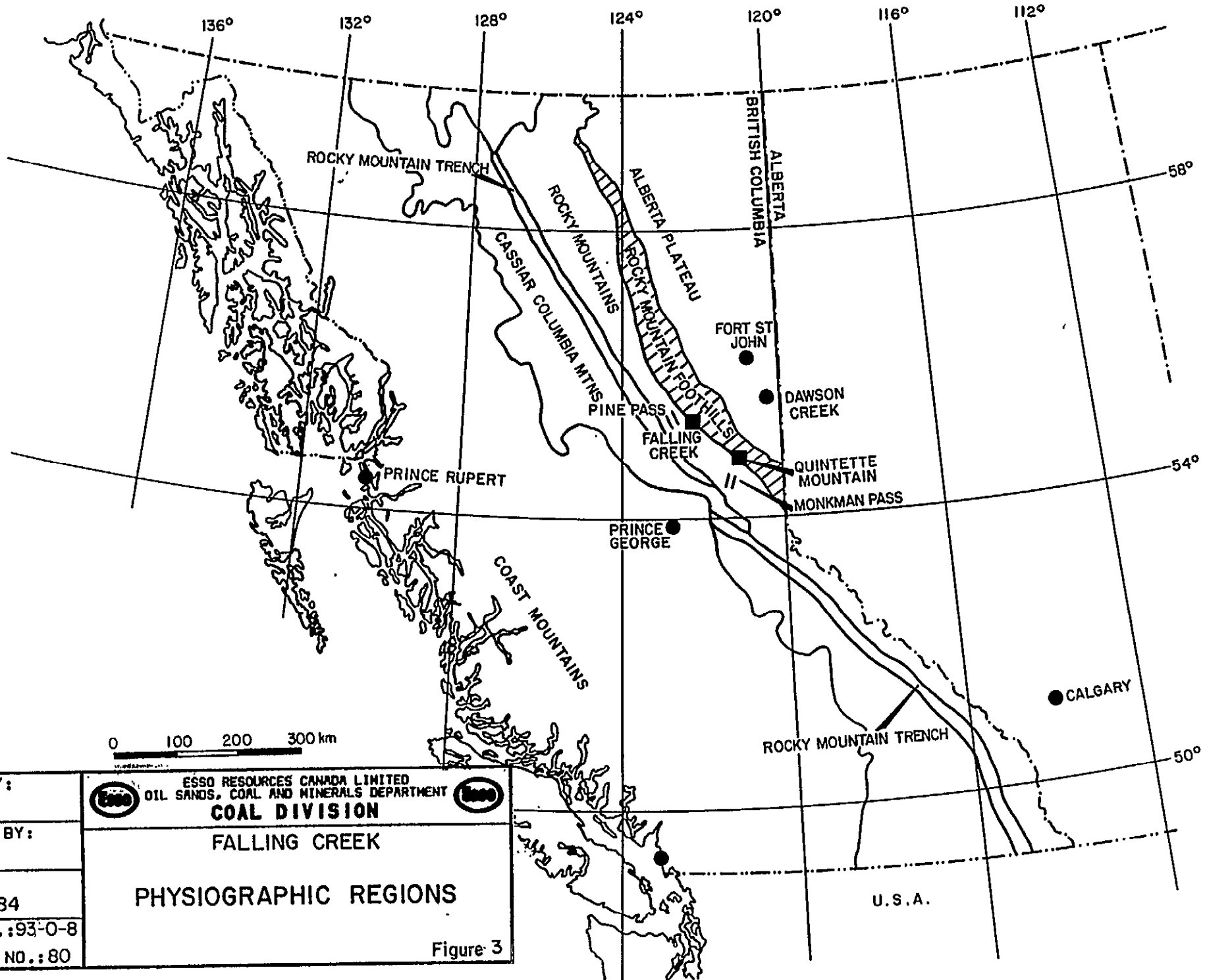
The northern British Columbia coal fields comprise marine and non-marine clastic sediments of Cretaceous age. The region is characterized by a complex tectonic and sedimentary regime that developed during late Jurassic to early Tertiary times. The sediments were derived from an orogenically uplifted land mass to the west and deposited in a foreland basin to the east. The sediments form an easterly thinning wedge of intertonguing continental and marine sediments. These sediments were formed during transgressive and regressive cycles and contain sequences of marine mudstones and sandstones which grade laterally and vertically into alluvial-deltaic sandstone, conglomerate, mudstone, and coal facies. Sediment accumulation varied in response to orogenic uplift and basin subsidence.

The easterly migrating clastic wedge was progressively deformed from west to east during the orogeny. The Rocky Mountains represent the Foreland Thrust and Fold structural province of the Columbian Orogeny. The Northern Rocky Mountains are divided into two subprovinces on the basis of deformation intensity, the Mountains and the Foothills (Thompson 1979, McMechan in preparation).

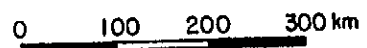
Cretaceous sediments outcrop within the Foothills subprovince. In northeast British Columbia the structural style of the Foothills subprovince is dominated by folding.

2.2 Stratigraphic Nomenclature

The Lower Cretaceous strata in the Peace River Coalfield have been studied by a number of authors: Duff and Gilchrist (1981), Hughes (1964, 1967), Stott (1967, 1968, 1974). Interpretation of the sedimentary facies and division of the strata into group, formation



2-2





DRAWN BY: CHECKED BY: DATE: MAR. 1984 FILE NO.: 93-O-8 DRAWING NO.: 80	 ESSO RESOURCES CANADA LIMITED OIL SANDS, COAL AND MINERALS DEPARTMENT  COAL DIVISION FALLING CREEK PHYSIOGRAPHIC REGIONS Figure 3
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TABLE 4

LOCAL STRATIGRAPHY

J. E. HUGHES

STOTT. & GSC

GROUP	FORMATION	GROUP	FORMATION
FORT ST. JOHN	COMMOTION	FORT ST. JOHN	COMMOTION
	MOOSEBAR		MOOSEBAR
CRASSIER	GETHING	BULLHEAD	GETHING
	----- DRESSER		CADOMIN
	----- BRENOT		BICKFORD
BEAUDETTE	MONACH	MINNES	MONACH
	BEATTIE PEAKS		BEATTIE PEAKS
	MONTIETH		MONTIETH
	FERNIE		FERNIE
0758K			

and member status varies between the authors. Different stratigraphic nomenclature has been used by each author. The stratigraphic nomenclature as described by Hughes (1964) has been used in this report because it has been the most useful within the Falling Creek property.

2.3 Introduction

The Pine Pass region is underlain by Lower Cretaceous sediments of the Beaudette, Crassier and Fort St. John Groups. The oldest sequence consisting of the Beaudette Group, comprises marine sandstones of the Montieth Formation, interbedded mudstones and siltstones of the Beattie Peaks Formation and quartzose to argillaceous sandstones of the Monach Formation. The group is not economically important for coal but forms an important stratigraphic marker.

Overlying the marine sediments of the Beaudette Group are continental alluvial-deltaic sediments of the Crassier Group. The group consists of the Brenot, Dresser, and Gething Formations, and lithologically comprises conglomerate, grit, sandstone, siltstone, mudstone and coal. Factors used to determine the formational boundaries within this group are: the development of cyclothems, the abundance of coal seams and plant debris, the frequency of coarse sandstones, grits and conglomerate.

Differences between the formations as summarized by Hughes are:

"Thin bedding, and the less perfect nature of the cyclothems, the thinness of the coal seams, and the barren conditions of many cyclothems, serve to distinguish the Brenot Formation. The Dresser Formation is recognized by its thicker

coarser-grained sandstones; the Gething by its greater proportion of shales, thick coal seams, and thick and well developed cyclothems.¹

Other less precise differences have been noted; the Brenot Formation forms a recessive, shaley interval between the resistive quartzite ribs of the Monach Formation and the grit and conglomeratic ribs of the Dresser Formation. The formational boundary between the Dresser and the Gething is variable, as it occurs at the top of the first dominant coarse clastic sequence. The Gething Formation is the most significant coal-bearing formation in the Pine Pass region.

The Fort St. John Group overlies the Crassier Group and consists of continental, transitional and marine facies. The group comprises (in ascending order) the Moosebar, Commotion, Hasler, Goodrich, and Cruiser Formations; only the Moosebar Formation underlies the Falling Creek property. In the Pine Pass region the depositional sequence grades vertically and laterally from marine mudstones and near-shore sandstones of the Moosebar Formation to continental (deltaic) sediments of the lower Commotion Formation.

The Gates Member of the Commotion Formation is not well developed in the Pine Pass region, however, it is an important coal-bearing formation to the south in the Sukunka - Bullmoose region.

2.4 Property Stratigraphy

The geologic evaluation of mineable coal seams within the Falling Creek property involves primarily the Gething and Dresser Formations of the Crassier Group and the Moosebar Formation of the Ft. St. John Group.

¹ Hughes J.E., 1967: Geology of the Pine Valley, B.C. Dept. of Mines and Petrol. Res., p. 39.

Type sections of these formations were established in the Peace River Canyon area by Hughes (1964) and Stott (1974). Formational thicknesses are considered to be at a maximum in the canyon area and thin to the north, south and east. South of the Peace River Canyon, in the Pine Pass region, and within the Falling Creek property, local variations in formational thickness and lithostratigraphic facies are common. These variations are typical in facies formed by complex depositional environments such as those of the Crassier and Fort St. John Groups.

The following sections will describe the Dresser, Gething and Moosebar Formations as they pertain to the Falling Creek property.

2.5 The Dresser Formation

The Dresser Formation has the most variable lithology of the Crassier Group. The stratigraphic assemblage comprises conglomerate, grit, sandstone, siltstone, carbonaceous mudstone and coal. The sandstones and conglomerates form lenticular, discontinuous bodies that grade both vertically and horizontally to finer grained sediments. Rapid changes in sedimentation resulted in poorly developed fining upward cyclothem. The cyclothem are often barren of coal or carbonaceous mudstone.

The type section of the formation has been described from outcrop and drill core in the Peace River Canyon. The thickness of the formation in the Peace River area ranges from 370 m in the west to 200 m in the east (Hughes 1964). The formation is quite well exposed in the Falling Creek area, where the complete stratigraphic section, as measured from outcrop, averages 350 m thick.

The formation has been intersected in drill core when drill holes spudded in the lower half of the Gething Formation continue into the upper portion of the Dresser Formation.

Coal seams of a mineable thickness have not been encountered within the Dresser Formation.

The upper contact of the formation is chosen at the top of the first major conglomeratic to coarse grained sandstone bed in the assemblage of coarser grained sediments. The lower contact is placed at the base of the last coarse grained sandstone bed above the finer grained sediments of the Brenot. Both the upper and lower contacts are thought to be conformable within the Falling Creek property.

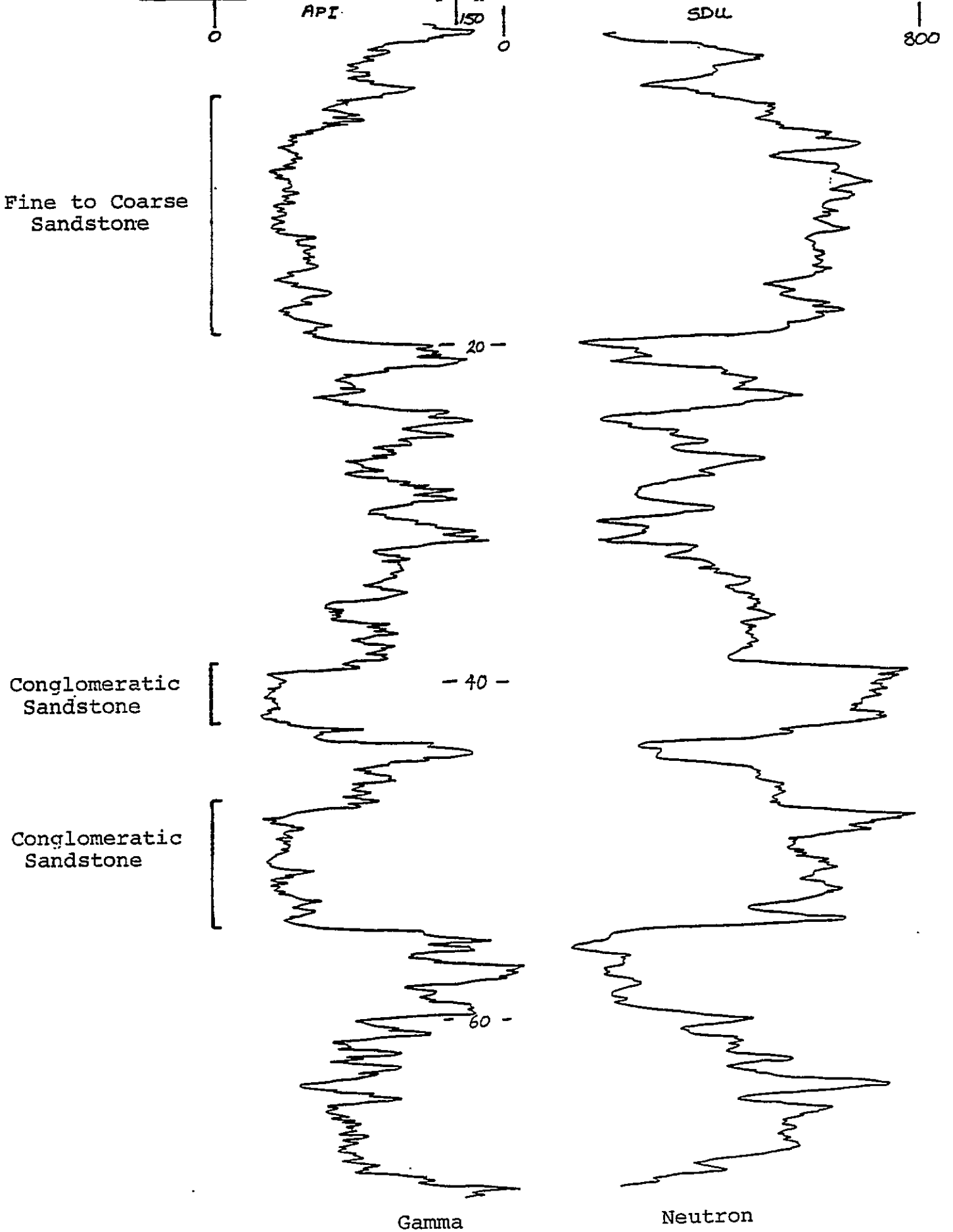
- extremely coarse conglomeratic beds are present in the southern portion of the property (outcrops L091, D218, D004 Map #2) near Hasler Creek, Judith Creek, and in the forest fire burn area.
- these conglomeratic beds are interbedded with grits and coarse to fine grained sandstones in thick crossbedded channel deposits that are often laterally persistent; individual beds, however, are difficult to trace throughout the property.
- in some instances the conglomerates form lenses within sandstone channels and appear to be channel lags.
- in other cases, the conglomerate beds grade laterally into sandstones.
- the conglomerate beds comprise subrounded to rounded chert and quartz pebbles; the pebbles vary in diameter from 3 mm to 10 cm.
- south of the property in the Brazion Creek area the conglomerates form 5 distinct beds (Map #3, D427, B401).
- north of the property on Mt. Bickford, three distinct conglomerate beds are seen.

- between these two locations, on Mt. Le Hudette, the conglomeratic facies are absent; only grits to fine sands occur with rare pebble horizons (L095).
- the coarse stage of sedimentation comprises a variable sequence of coalescing and diverging sand bodies interbedded with finer grained sandstone and siltstone sequences; the sequences may grade to carbonaceous mudstones or thin coals.
- in outcrop, sandstone beds of the Dresser commonly form resistant ribs; recessive or covered intervals (siltstones, mudstones, coal) occur between the resistive beds.

The variations between the Gething and Dresser Formations on a comparison basis are:

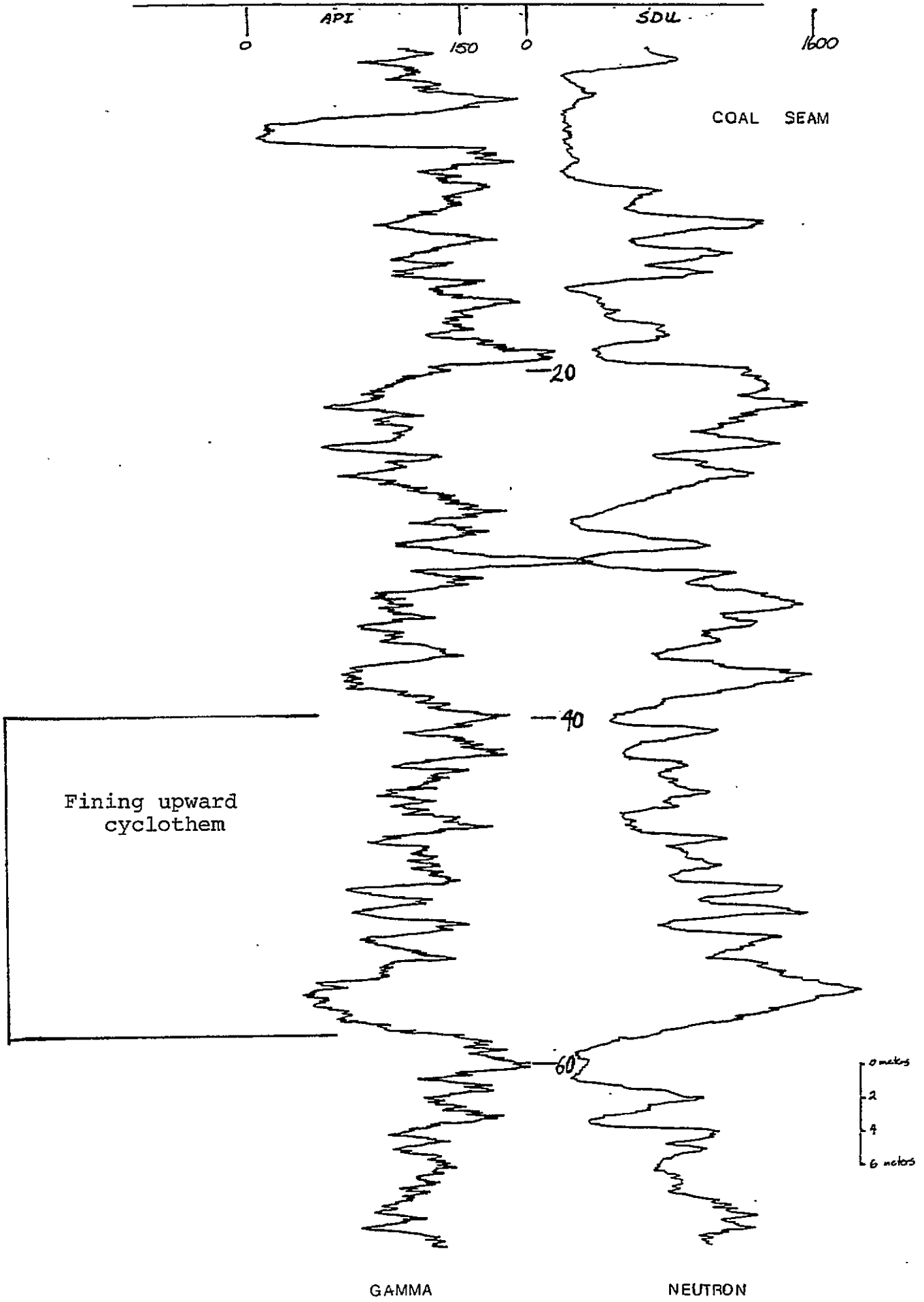
- coal seams are thinner and much less common in the Dresser than in the Gething; no coal seams of mineable thickness have been found in the Dresser.
- carbonaceous partings and plant fragments are abundant in the Gething and less common in the Dresser.
- fine-grained sediments make up a larger proportion of the stratigraphic sequence in the Gething than in the Dresser.
- coarse-grained sandstones, grits and conglomerates are common in the Dresser and rare in the Gething.
- cyclothems are well-developed in the Gething while the cyclothems of the Dresser are poorly developed; i.e. irregular, incomplete, thinner.

TYPICAL DRESSER FORMATION GEOPHYSICAL LOG TRACE



2-10
FIGURE 5

TYPICAL GETHING FORMATION GEOPHYSICAL LOG TRACE



- the geophysical log response of the Dresser Formation is blockier than the Gething Formation (Figures 4 and 5).
- clean sandstone beds are common in the Dresser; Gething sandstones are argillaceous to silty and are generally dirtier than the Dresser.

2.6 The Gething Formation

Within the Falling Creek property, mineable coal seams occur only in the Gething Formation.

The type section of the Gething Formation in the Peace River Canyon area, as described by Hughes (1964) and Stott (1974), varies from 350 m to 550 m in thickness. This variation is primarily a result of differing formational definitions by the authors. Within the Falling Creek property, the Gething Formation has been extensively drilled; although a complete stratigraphic section has not been intersected, a composite section is determined to be approximately 450 m thick.

The Gething Formation is a cyclic coal-bearing succession consisting of a heterogeneous assemblage of rare conglomerate, coarse to fine grained sandstone, siltstone, carbonaceous mudstone and coal. The sediments were deposited in a succession of fining upward cyclothem. Coal seams developed in the culminating phase of many cyclothems.

The upper contact of the formation is usually abrupt and distinct.

At the contact, the lithostratigraphic facies change from continental to marine. Commonly, coal seams or carbonaceous siltstones are immediately overlain by the marine Bluesky Equivalent Member of the Moosebar Formation. Stott suggests that this contact is disconformable, representing a hiatus of short duration (Stott, 1972).

The lower contact is variable and is not defined by a single persistent bed; the lower Gething and the upper Dresser Formations are considered by some researchers to be laterally equivalent. The contact may be placed at the top of a distinct conglomerate bed at a locality in the southern portion of the property, while at a northern locality, where there are no conglomerates, it may be placed at the top of a medium to coarse-grained sandstone bed.

In the southern end of the property, the massive conglomerate and sandstone beds of the Dresser Formation are overlain by a Gething coal seam, named the Contact Seam.

A detailed description of the Gething stratigraphy has been compiled from geological mapping and drill core, as follows:

- the coal seam stratigraphy and depths within the Gething Formation are calculated from the Moosebar/Gething contact.
- the main lithologies are mudstones, siltstone, and sandstones.
- these sediments typically occur in fining upward cyclothems that culminate in carbonaceous mudstones or coal.
- coal seams are best developed in the upper half of the formation.
- coal seams vary in thickness from less than half a meter to 10 meters.
- a major coal seam, correlateable across the property, occurs between 50 and 90 meters below the Moosebar/Gething contact.
- carbonaceous plant debris is abundant; plant fragments often form carbonaceous partings or laminations, rootlets are common, petrified tree stumps are rare.

DESCRIPTION OF PLATES
GETHING FORMATION

6. Typical cyclothems within the Upper Gething Formation in DH 83-21.

NOTE: rootlets and interlaminations

7. Ideal fining upward sequence from coarse-grained channel sand to carbonaceous mudstone and coal.

NOTE tonstein marked by orange dot

8. Brenda seam with tonsteins marked by orange dots (DH 83-21).





- cyclothem interbeds vary from a few centimeters to many meters thick
- laminations, crosslaminations and thin interbeds are common in all lithologies
- the sandstones are medium to very fine-grained and commonly argillaceous to silty
- large sandstone channels over 10 meters thick are common in the lower half of the formation; lag deposits with gritty sandstones and pebbles, large plant casts and coal stringers are common at the base of thick sandstone beds.
- conglomerate lenses and discontinuous 1-10 m thick conglomeratic beds occur in the lower half of the formation
- tonsteins occur in the top 150 meters of the formation and are often associated with coal seams.
- fossiliferous mudstone zones have been found in D.H. 83-20. The mudstone is calcareous and contains abundant gastropod shells up to 2 cm in width, broken bivalve shells, bioturbations and tubes (worm burrows); the zones are thought occur within the lower Gething Formation.

2.7 The Moosebar Formation (Fort St. John Group)

The northern portion of the property is predominantly underlain by the Moosebar Formation. The formation is the most consistent stratigraphic marker within the Falling Creek property. The type section in the Peace River Canyon ranges in thickness from 300-400 meters. As much as 400-600 meters have been reported (Duff & Gilchrist 1981) but these thicknesses are considered to be a

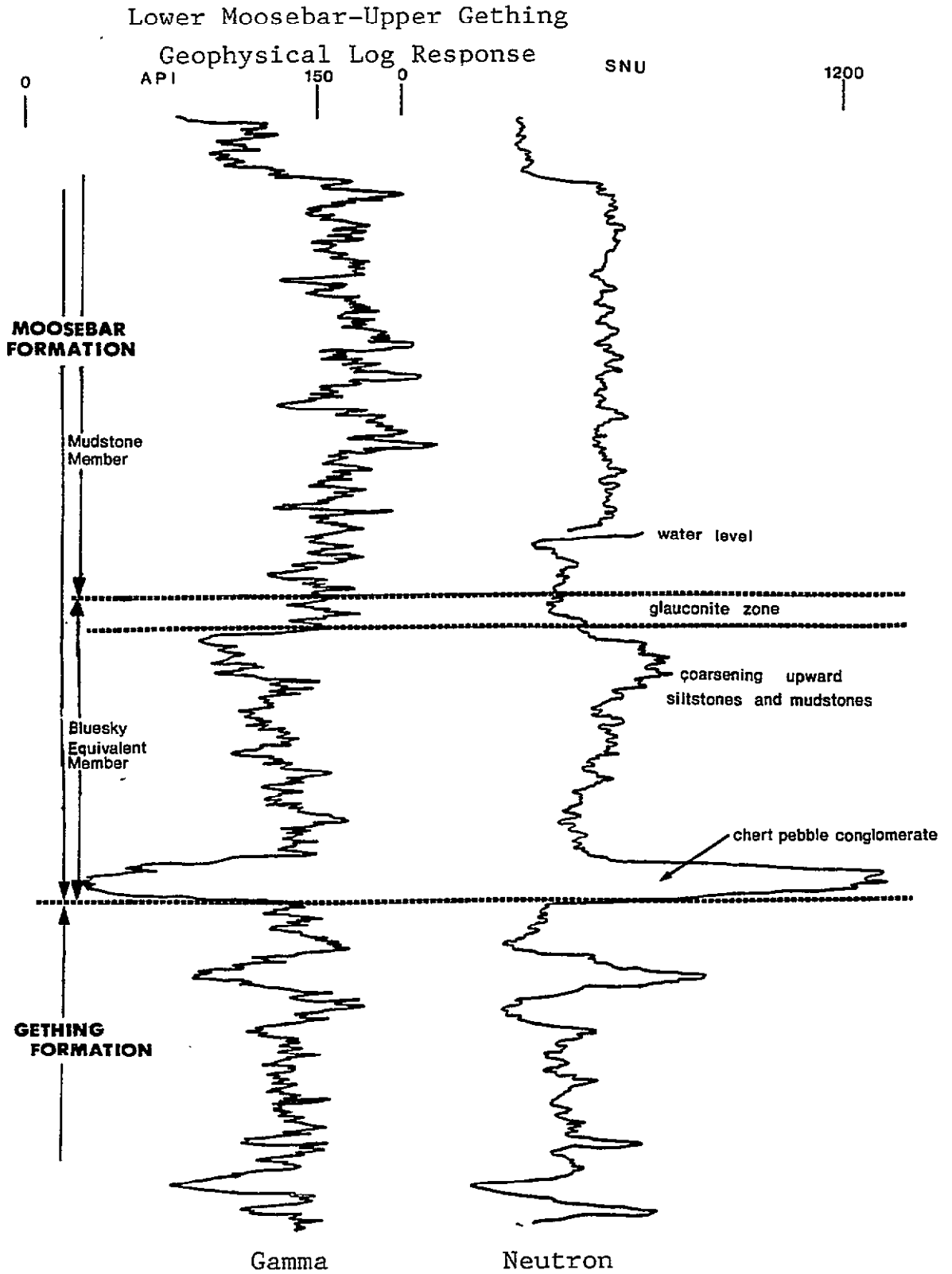
function of structural overthickening. The true thickness of the Moosebar Formation has not been intersected in drill holes completed within the Falling Creek property; 298 m of the formation was intersected in DH 75-2 without reaching the lower contact. Faulting has repeated the Moosebar/Gething contact in a number of places throughout the property.

Due to the recessive and heavily weathered nature of Moosebar outcrops, the formation is best described from drill core. Three distinct members have been distinguished from drill intersections: the Bluesky Equivalent Member, the Mudstone Member and the Bioturbated Siltstone Member.

The Bluesky Equivalent Member

- The Bluesky Equivalent Member forms the abrupt basal contact (of the Moosebar Formation) with the Gething Formation.
- It ranges in thickness from 10 to 20 meters.
- The basal contact usually varies from a chert and quartz pebble conglomerate up to one meter thick, to an argillaceous sandstone with a few random chert and quartz pebbles.
- The argillaceous sandstone matrix of the conglomerate may contain plant debris and coal fragments.
- The basal contact in DH 83-21 does not consist of a sandstone or conglomerate but rather a mudstone. The mudstone grades vertically to interbedded mudstones, siltstones and sandstones typical of this member. This marine mudstone overlies a coal seam of the Gething Formation.
- The upper contact of the Bluesky Equivalent is indicated by a glauconitic mudstone, up to one meter thick.

FIGURE 6



- The characteristically green glauconite forms soft, irregular 1-2 mm sized grains.
- Between the glauconitic mudstone and the pebble conglomerate, the member consists of a coarsening upward sequence of interbedded mudstones, siltstones and sandstones.
- These interbedded, interlaminated lithologies have both gradational and sharp contacts; individual beds vary in thickness from 2 to 25 cm and give the unit a banded appearance.
- Bioturbation is common throughout the interbedded unit; minute tubes (burrows) are well preserved and sometimes replaced with pyrite.
- Rarely, clean, well sorted marine sandstone beds (up to one meter thick) occur near the top of the unit.
- The entire Bluesky Equivalent Member forms a distinctive geophysical log trace; this feature is the lithostratigraphic datum used when correlating coal seams within the Gething Formation (Figure 6).

The Mudstone Member

- The Mudstone Member is typically a dark grey, homogeneous mudstone.
- The bedding is indistinct and laminations are rare.
- Ironstone concretions, marine bivalves and minute tubes (worm-burrows) are common in the core.

- In outcrop the mudstones weather to a light brown or olive grey and are recessive and heavily broken; the ironstone concretions are resistive and typically bright orange, marine bivalves and worm burrows are rare.
- Pyrite is present as disseminations, small nodules, and in pyritized burrows.
- This member comprises the largest portion of the formation; i.e. approximately 200-300 meters thick.

The Bioturbated Siltstone Member

- The Bioturbated Siltstone Member is a distinctive, highly bioturbated, interbedded siltstone, mudstone and sandstone sequence.
- This member is considered to be approximately 100-150 meters thick, and equivalent to the Spieker Member (Duff and Gilchrist, 1981) of the Moosebar Formation (Dave Gibson, G.S.C., personal communication).
- It occurs above the Mudstone Member and is interpreted as a near shore marine facies, transitional between the marine mudstones of the Moosebar Formation and the continental sandstones of the Gates Member of the Commotion Formation.
- Distinct lithofacies within the member have been distinguished in core. The lithofacies, defined by the dominant lithology and the degree of bioturbation, are: 1) bioturbated mudstone 2) bioturbated mudstone/sandstone 3) interbedded sandstone/mudstone and 4) sandstone.
- Interbeds within the lithofacies are generally less than 5 cm thick and have sharp contacts.

- Sandstone interbeds are clean and may be massive to cross bedded with cross laminations.
- The sandstone interbeds are interpreted to be turbidite deposits (Duff & Gilchrist, 1981).
- Mudstone interbeds are preferentially bioturbated with a mottled appearance.
- Dewatering, compaction and soft sediment deformation structures are common at sandstone/mudstone interfaces.
- Primary sedimentary structures are poorly preserved in all facies where biological activity has been intense.
- Tubes (worm burrows) vary in length from 2 mm (common in mudstones) to 15 cm (present only in sandstones).
- Pyrite is commonly associated with carbonaceous stringers and occurs as nodules and disseminations throughout the member.
- Crystalline rosettes, two to three cm in size, composed of calcium carbonate are found throughout the member, whether in outcrop or drill core.
- Bioturbations, interlaminations, and interbeds are not readily distinguished in outcrop.

DESCRIPTION OF PLATES

MOOSEBAR FORMATION

1. Glauconite horizon indicating the top of the Bluesky Equivalent Member in DH 83-18.
2. Interbedded and bioturbated mudstones and siltstones in the Bluesky Equivalent Member (DH 83-21).
3. Bluesky Equivalent Member (Conglomerate) in DH 83-17.
4. Photo showing Bluesky Equivalent Member in DH 83-21.

NOTE: 1) glauconite zone (green dot) between marker block and sandstone.

2) mudstone member above glauconite zone.

3) clean marine sandstone below glauconite zone (green dot).

4) banded nature of bioturbated sediments below the clean sandstone.

5) contact with Gething not shown, but the basal sandstone/conglomerate is absent.

5. Bioturbated Siltstone Member.

NOTE: disturbed bedding and large worm burrows. Orange dot indicates crystalline rosette (possibly calcium carbonate).



3.0 STRUCTURE

3.1 Regional Structure

The Rocky Mountains are divided into structural and physiographic provinces on the basis of distinctive topographic, stratigraphic and structural features.

On the basis of structural style, they are divided into northern and southern halves; the southern Rockies are dominated by thrust faults, while the northern Rocky Mountains are dominated by folds. The northward structural change from fault dominated to fold dominated terrain coincides with the northward stratigraphic change from competent carbonate units to incompetent clastic units within the deformed sedimentary succession. The deformation of the Rocky Mountains began in late Jurassic and continued until late Tertiary time (Thompson 1979).

In the Pine Pass area the northern Rocky Mountains are divided into two northeast-southwest trending subprovinces; the Mountains and the Foothills. The coal-bearing Lower Cretaceous strata lie within the Foothills Subprovince. The Foothills Subprovince is further divided into inner and outer belts. The outer belt comprises low amplitude, long wavelength folds that merge eastwardly with the undeformed plains strata. In the inner foothills belt the folding is more intense with high amplitude folds. The Falling Creek property lies within the inner foothills belt.

3.2 Local Structure

3.2.1 Introduction

The major structures in the property area from west to east are: the Bickford Anticline, the Fisher Syncline and the Pine River Anticline. These three major folds

are well-defined north of the property along the Pine River Valley. In the southern portions of the Falling Creek property, these major folds are indistinct and cannot be mapped as continuous major folds along strike. The Bickford Anticline plunges to the south and culminates before reaching Brazion Creek, the Fisher Syncline broadens and is indistinguishable.

Many folds and faults along strike are associated with the Bickford Anticline and the Fisher Syncline. A west dipping thrust truncates the eastern limb of the Bickford Anticline along Mt. Le Hudette. A high angle thrust fault running parallel to the axis of the Fisher Creek Syncline juxtaposes vertical beds of the Gething Formation against gently dipping beds of the upper Moosebar Formation in Beaudette Creek. More commonly, however, important structural and stratigraphic breaks such as these remain unexposed.

3.2.2 Folds and Faults

Folds are the most common structural feature seen in outcrop in the Foothills Subprovince. Within the property, most folds have been interpreted as asymmetrical concentric folds.

Although folding is the dominant structural style, faulting is an intrinsic feature in concentric fold development. Inherent to the concentric fold model is the upper and lower detachment zone and the internal slippage zone that permits interbed movement during folding (Dahlstrom 1970). Excess volume developed in the limbs or the core of concentric folds may be accommodated during the development of the fold by: 1) thrust faulting across

the steep limb, 2) subsidiary folding or minor faulting directed towards the axis, 3) multiple subsidiary folding within adjacent folds (Hughes 1967).

Some of these features are observed in structures within the property. Fold limbs are faulted, or even overturned; disharmonic folding (m scale), slickensiding and shearing are common. The upper and lower detachment zones associated with concentric folds are, however, generally interpretive features.

Changes have been noted in the orientation of the fold axes along strike. In the central portion of the property near Sharon Creek a distinct variation occurs; north of Sharon Creek the average strike varies from 320° - 310° ; south of Sharon Creek the average strike varies from 310° to 295° . Small portions of the property vary from the regional strike. In the area known as the Forest Burn, the fold axes trend in a more northerly direction and plunge steeply ($330^{\circ}/7^{\circ}$). These variations may be the result of regional strike variations and minor room problems associated with highly folded terrain. Culminations of folds, changes in wave length and variations of axial trends along strike may be explained by en echelon folding (Dahlstrom 1970, Fitzgerald 1968). Zig zag patterns of fold pairs and combinations of stacked anticlines separated by faults are common styles of en echelon folding, however, they have never been recognized in geologic mapping within the property.

Other authors have suggested that the most common folds in the northern Rocky Mountains are box and chevron style anticlines with broad, shallow synclines (Thompson 1979, McMechan, in preparation). The Fisher Syncline is an

excellent example of a broad syncline; other smaller synclines within the property are also gently dipping, shallow features. Other bedding plane attitudes may be interpreted as portions of box or chevron style folds. Because most folds are poorly exposed, fold style interpretations are completed on cross-sections; some folds have been interpreted as box folds, but the majority are assumed to be cylindrical (i.e. concical angle less than 10°).

The property is bounded on the east and west by two faults that continue many kilometers along strike (Maps #1, 2, 3, 4, 5). Both these faults are westerly dipping thrusts; within the property smaller thrust faults dip both east and west. The significance of a fault mapped on an outcrop scale is often hard to determine. Due to the paucity of marker beds and the similarity of lithologies within the Crassier Group, the relative direction and amount of movement is always interpretive.

Low angle thrust faults responsible for stratigraphic over-thickening have been interpreted in a number of drill holes (83-21, 83-18, 82-9, 75-2), and cross-sections. Geologic evidence has been used to determine the location of each fault, however, the displacement and hade is usually estimated from cross-section interpretations.

Throughout the stratigraphic section, fractures and joints are infilled with calcite. Along fault planes calcite veining and fracture filling is abundant and often associated with minor brecciation, shearing and steeply inclined bedding.

Coal seams are often found to be highly sheared and powdered with bedding planes obliterated. Because coal is more ductile than sandstone, stress applied during folding is often relieved in coal seams that are easily sheared, faulted and overthickened. Calcite is common in structurally disturbed seams. The investigation of coal samples (with calcite veining) under a microscope indicates that more than one stage of calcite fracture filling may commonly occur.

3.2.3 Discussion

Recently, structural geologists working in fold and thrust belts have begun addressing structural anomalies such as blind thrusts (thrust faults that fail to reach the surface or have any surface expression). Thompson discusses blind thrusts in the Halfway River area north of the Falling Creek property:

"the lack of major thrust faults is more apparent than real; most remain buried disharmonically within the incompetent Devonian and Mississippian Besa River Formation, beneath the conspicuous box and chevron style folds of the younger units."²

The "younger units" are Lower Cretaceous sediments equivalent to the Beaudette and Crassier Groups.

Jones (1982) suggests that blind faults do not merely die out. Rather, these faults merge with easterly-dipping thrusts that form upper detachment zones. Below the upper detachment, west dipping thrusts (blind thrusts) may be

² Thompson, R.I., 1979, p 1239.

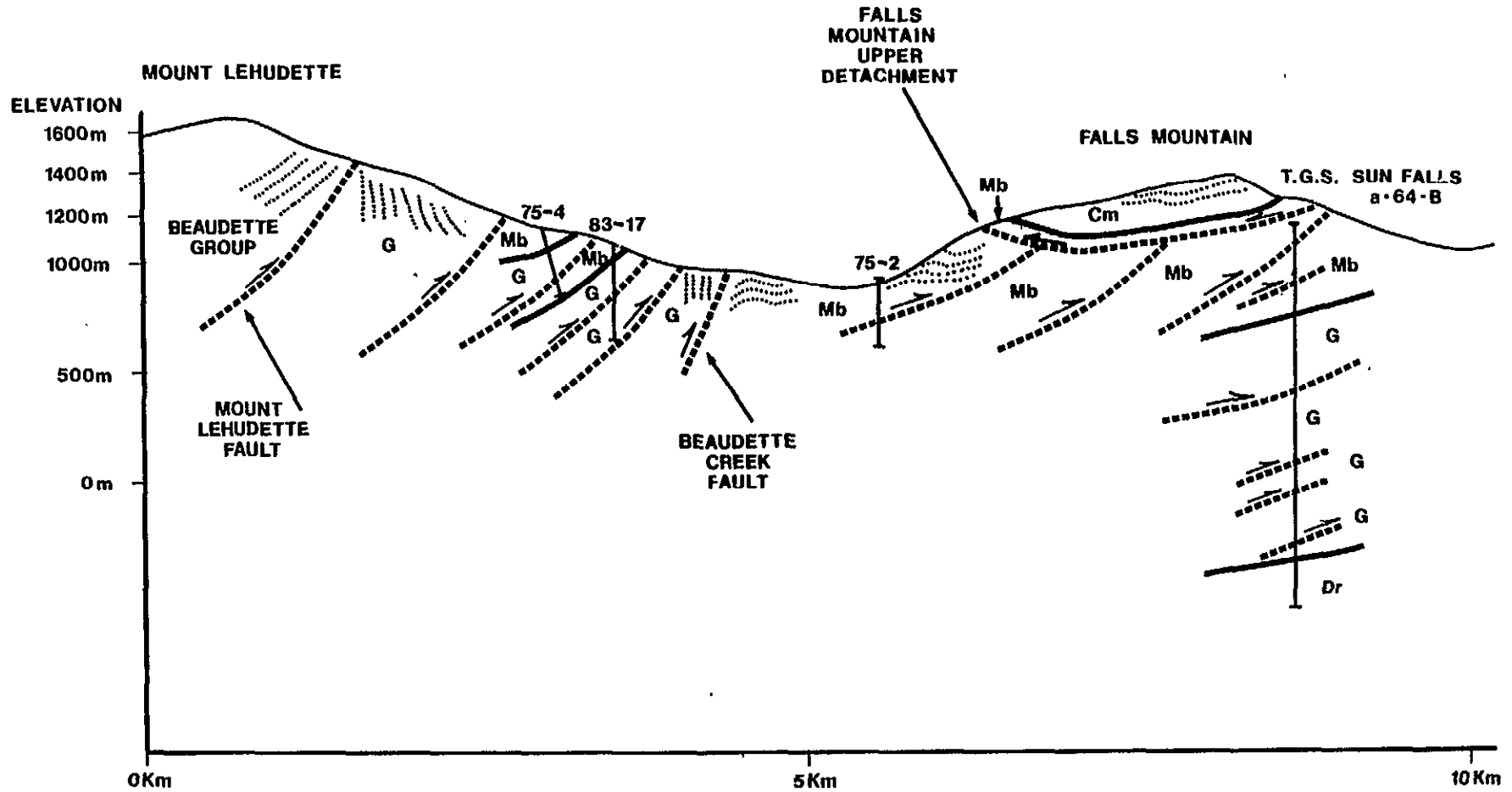
systematically stacked upon each other, giving rise to tectonic over-thickening and complex subsurface geology, known as the "Triangle Zone".

Jones (1983) suggests that a slippage plane occurs within the Moosebar Formation on Falls Mountain. This plane of slippage is thought to be coincident with a major east dipping thrust fault running through Falls Mountain. It is postulated that the Falls Mountain fault must truncate the Beaudette Creek and Mt. Le Hudette faults, and may even truncate the Fisher Creek syncline. A zone of detachment results along the fault plane and allows a complex structural and stratigraphic setting similar to a "Triangle Zone" to occur below the zone of detachment. Above the detachment simple structures indicative of minor deformation occur (Figure 7).

Work completed by the G.S.C. (McMechan, in preparation) suggests that the Lower Cretaceous sediments in the Peace River and Pine Pass areas are above a major detachment zone. The Lower Cretaceous strata above the detachment have not been as penetratively deformed and shortened as the Triassic and Jurassic strata below the detachment.

The purpose of this discussion is to suggest that an additional zone of detachment occurs within the Fort St. John Group (Upper Moosebar Formation). Below the detachment, vertical beds, high angle and bedding plane faults and anomalous fault repeated sections occur. Above the detachment simpler structures are found.

As the mechanics of this structural model are further understood and refined, structural complexities within the Falling Creek property will be more easily resolved.



LEGEND	
Cm	Commotion Fm. Fort St. John Group
Mb	Moosebar Fm. Fort St. John Group
G	Gething Fm. Crassier Group
Dr	Dresser Fm. Crassier Group
Br	Brenot Fm. Crassier Group
Monach Fm.	Beaudette Group
Beattie Peaks Fm.	
Monteith Fm.	
75-4	Drillhole
—	Formation Contact
-----	Fault
.....	Form Lines

SCALE	
Horizontal	1cm = 500m
Vertical	1cm = 305m

CROSS SECTION THROUGH FALLS MOUNTAIN ✓

FIGURE 7

4.0 ENVIRONMENT OF DEPOSITION

The Lower Cretaceous Beaudette, Crassier and Ft. St. John Groups comprise complex sequences of intertonguing marine and continental sediments that make up part of a thick clastic wedge that developed from late Jurassic to early Tertiary times.

Sediments from each group dictate specific depositional environments. Commonly glauconite is taken to indicate normal marine waters, weakly reducing conditions, and a slow rate of deposition. The depositional environment associated with coal must be free of eroding currents and must maintain vegetative accumulation for long periods of time. Coal seams that reach mineable thicknesses are associated with protected coastal environments, lower and upper delta plains, and lower alluvial plains (McLean and Jerzykiewicz, 1978). Conversely, conglomeratic units are products of erosional and depositional processes involving rapidly varying flow regimes. Conglomerates and grits are associated with alluvial fan deposits and braided river plains. To accommodate these extreme environments within a few hundred meters of section, a complex interaction of the factors controlling facies distribution is required.

The progressive, but sometimes sporadic deformation of the Cordillera to the west resulted in infill and subsidence of the developing foreland basin. The sediment source for the Gething and Dresser Formations is believed to be the Paleozoic and Pre-Cambrian rocks in the western ranges of the Rocky Mountains (Stott 1972).

The coal measure cyclothems of the Gething and Dresser Formations are bounded by marine sediments of the Beaudette and Ft. St. John Groups. Together, the Gething and Dresser Formations may broadly be described as a fining upwards cycle. The high variability of the coarse member (Dresser Formation) suggests rapid variation in sediment supply, flow regime and sedimentary processes. The Gething Formation has a more regular, cyclic flow regime. The fining upwards cycle which culminates in the upper Gething Formation is indicated by the increased presence of coal seams.

The tectonic and sedimentary processes of the Dresser and Gething Formations are thought to be analogous with humid alluvial plain and delta plain facies models. Within the Dresser, we see both proximal and distal facies of the humid alluvial plain. Within the Gething, many different facies are represented. Large channel sandstones, finely interbedded and cross-laminated sandstones, siltstones, carbonaceous mudstones and coals can all be interpreted as various components of a deltaic complex. The conglomeratic sandstones within the Gething may derive from Dresser conglomerates, transported and reworked by eroding channels.

The Gething Formation is overlain by marine mudstones of the Moosebar Formation that were deposited by the Moosebar Sea. The advancement of the sea is thought to be in response to increased subsidence of the foreland basin and the rapid decrease in sediment supply. The Bluesky Equivalent Member of the Moosebar Formation is considered to be the erosional remnant of the advancing sea. A minor erosional unconformity may occur between the Gething and Moosebar Formations, because of the Moosebar transgression.

5.0 COAL

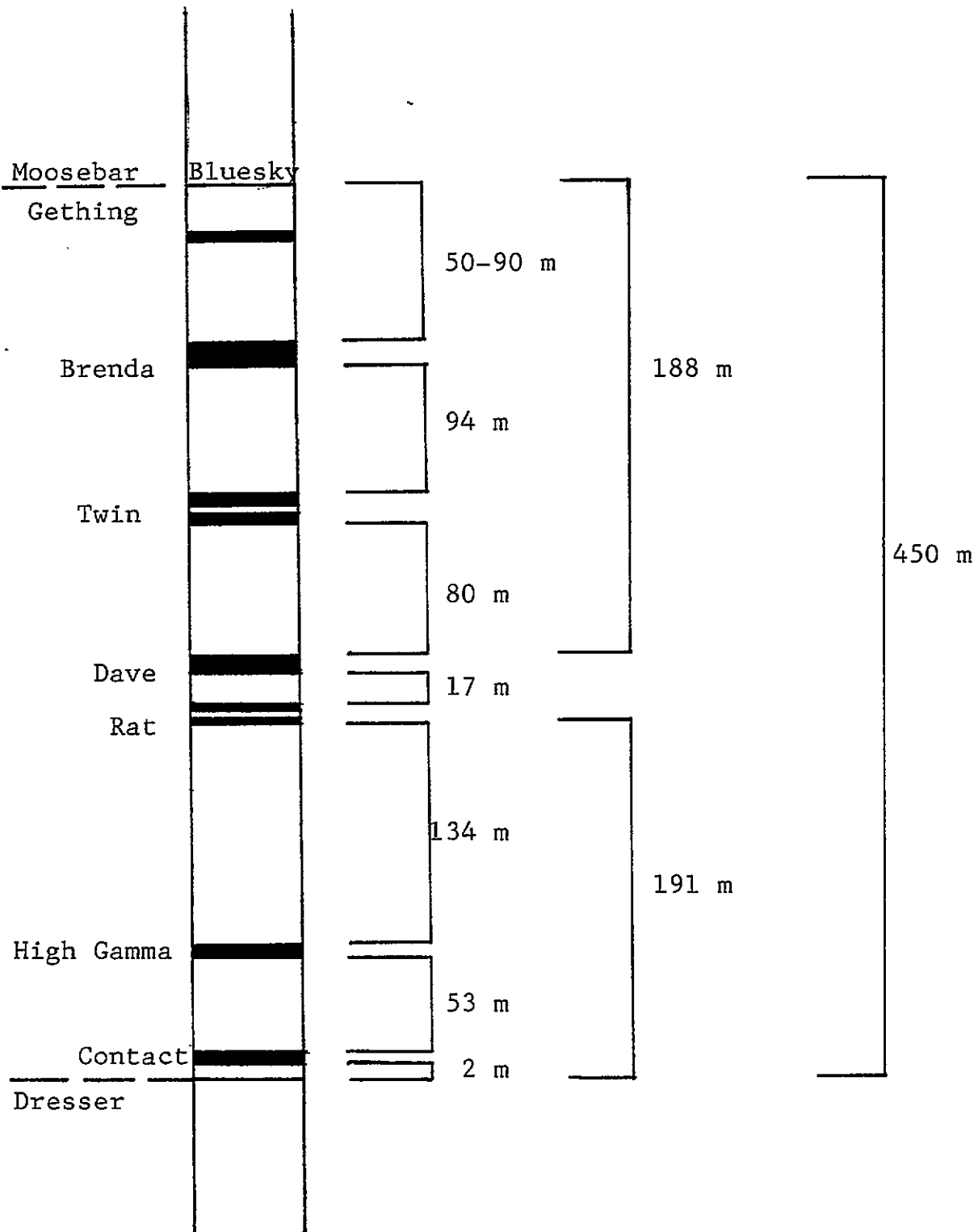
5.1 Coal Seam Stratigraphy

At the completion of the 1982 program a number of coal seams were correlated across the southern licenses. The highest and most economically attractive seam is the Brenda Seam (Figure 8). This seam was thought to be 30 to 50 m from the Moosebar/Gething Formation contact.

The drill hole locations for the 1983 program were chosen specifically to intersect the Moosebar/Gething Formation contact and the upper portion of the Gething coal measures. This objective was successfully achieved in drill holes 83-17, 83-18 and 83-21. The formation contact in these holes is used as the datum for the coal seam stratigraphy. In each hole a thick seam is encountered within the first 90 m of Gething strata and is correlated with the Brenda Seam (in the south). The seam shows considerable variation in profile between the widely spaced drill holes, and is correlated by virtue of its thickness and stratigraphic position. The seam is associated with tonsteins either as partings within the coal or in the roof and floor rocks. Tonsteins are also found in the Brenda Seam to the south.

Drill hole 83-19 begins in the upper Gething Formation and intersects a number of faults. The interrupted stratigraphic section is therefore difficult to correlate. Two thick coal seams occur in the drill hole. The upper seam is similar in rank and quality to the Brenda and is thought to be equivalent to it; this seam is known as the Sharon seam. Although the Sharon seam is equivalent to the Brenda, tonsteins have not been found within or near the Sharon seam; tonsteins do occur elsewhere in the drill hole.

FIGURE 8
COAL SEAM STRATIGRAPHY



NOTE: INTERBURDEN THICKNESSES ARE AN AVERAGE.

DRAWING IS NOT TO SCALE

Other seams of mineable thickness were also intersected in the drill holes; they are only locally persistent and are not correlatable. None of the drill holes intersect uninterrupted stratigraphic sections and are difficult to correlate without the upper Gething contact.

Drill Holes 83-14 and 83-20 appear to intersect lower Gething strata. Drill hole 83-14 contains one major coal seam which is interpreted to be equivalent to the Dave Seam. The exact stratigraphic position of drill hole 83-20 has not been determined.

Drill holes 83-15 and 83-16 were spudded in the Moosebar Formation; due to steeply inclined strata, the drill holes were abandoned before reaching the Gething formation.

Coal Seams

A number of the coal seams intersected in the 1983 drilling are potentially mineable.

D.H. 83-14 Dave Seam 63.22 - 69.41 m

The mining interval for this seam is 65.39 - 67.58 m which represents 2.22 m apparent thickness and 1.88 m true thickness. The raw composite for this interval is:

MOIST	ASH	VOL	FC	S	Btu/lb	FSI	ROM
0.71	16.8	15.3	66.9	0.54	12,640.5	1	1.37

Despite the 16.8% ash the seam has a good heating value and it might be possible to sell the coal as a raw thermal product.

The coal has a low volatile content and a fuel ratio of 4.4:1. Most modern boilers for thermal power generation will not accept coal of this type.

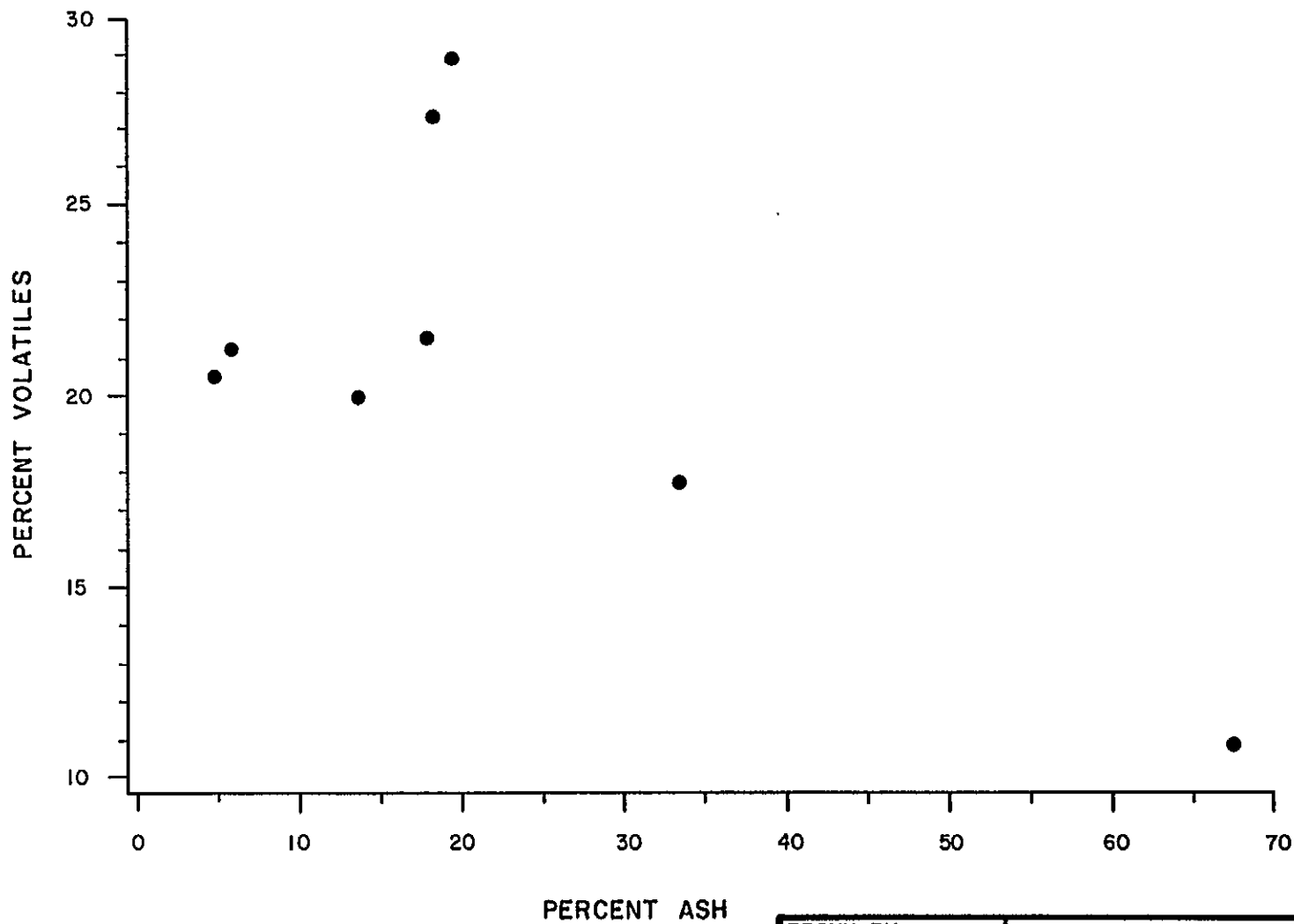
The volatiles on a dry ash free basis are 18.5%; this classifies the coal as low volatile bituminous by ASTM standards. The volatile content of the coal may actually be even lower, because, this sample has an ash content of 16.8% and this may affect accurate volatile measurements. For example, the 19 x 6 mm size fraction for this seam at 1.4 S.G. showed 17% volatiles (d.a.f).

Vitrinite reflectance, however, clearly ranks this coal as medium volatile bituminous (Table 5). For a given rank, the maceral constituents of coal yield variable amounts of volatiles. Maceral constituents yielding low volatiles combined with the effects of oxidation are thought to be the reasons for this seam having a low volatile content and a low swell button (maceral analysis was not completed on this seam).

D.H. 83-19

This drill hole intersected a remarkable number of coal seams. The core and dipmeter information indicate that the strata is highly disturbed and possibly repeated by thrust faults. Tonstein beds occur in the first 35 m of the hole and then again at 156 m. In two cases they are associated with coal seams but neither seam is over 2 m in thickness. A thick coal interval midway down the hole, called the Sharon seam, has unusual bands of "oolitic textured" calcite. Similar occurrences have been seen in seams outcropping in the southern portion of the property, where they were found to be root and tree stump replacements.

A second thick coal interval is intersected near the base of the hole and has a rather similar profile to the first, though no "oolitic textured" calcite was found in the core from this seam. Due to the uncertain structure and depth to this seam, only the upper interval was examined for mineable coal. It is possible that this seam correlates with the Brenda seam.



DRAWN BY:
J. HORGAN

CHECKED BY:

DATE:
FEB. 1984

FILE NO.: 93-0-8

DRAWING NO.: 98

ESSO RESOURCES CANADA LIMITED
OIL SANDS, COAL AND MINERALS DEPARTMENT
COAL DIVISION

FALLING CREEK PROJECT
BRENDA SEAM D.H. 83 - 19
PERCENT ASH vs. PERCENT V.M.

Figure 9

The mining interval of the Sharon seam is from 107.52 to 115.85 m. The total true thickness of the unit is 4.18 m of which 3.31 m is coal. A mudstone parting from 110.92 to 112.66 m could possibly be selectively mined. A composite of the proximate analyses, including the parting, is as follows:

MOIST	ASH	VOL	FC	S	Btu/lb
0.95	30.23	18.26	50.18	0.26	10,418

The upper bench alone has a composite of: 107.52 - 110.92 UP BH

MOIST	ASH	VOL	FC	S	Btu/lb	FSI	R \bar{O} (max)
1.00	16.81	20.40	61.50	0.30	12,650	3.5	1.23

The lower bench has a composite of: 112.66 - 115.85 L ϕ BH

0.79	11.73	21.90	64.00	0.32	13,358	2.5
------	-------	-------	-------	------	--------	-----

The geophysical logs indicate that these composites do not accurately reflect the quality through this seam (probably due to incomplete recovery); the upper bench appears cleaner than the lower bench, while the analyses indicate the reverse situation.

The analyses do, however, show some interesting characteristics. A composite of the two benches together, without the mudstone parting, gives an ash of 13.74% and volatiles of 21.51%. This is one of the highest volatile readings from the raw analyses and translates to 25% volatiles (d.a.f.) or a medium volatile bituminous coal.

In both the upper and lower benches, "oolitic textured" calcite zones, as discussed above, were found. The proximate analyses indicate exceptionally high volatile percentages from both these intervals and may be attributable to derived CO₂ from the CaCO₃ during the analysis. When a plot is made of ash against volatile percentage, the calcite rich horizons are clearly separated (Figure 9).

It is concluded that volatiles can be derived from calcite and that a truer value of the volatiles derived from combustion of the coal itself can be seen from analyses of individual coal plies. Ply I (Seam #7) gives an ash of 4.76% and volatiles of 20.48% which translates to 21.72% on a dry ash free basis.

Vitrinite reflectance ranks the coal as medium volatile bituminous. Ranking the seam on the basis of volatile content alone gives a rather ambiguous result. It is interesting to note that with respect to the Dave seam, the reflectance has decreased while the volatiles have increased. This is thought to represent a stratigraphic rank profile.

The fuel ratio for this seam is over 3:1 (based on its analytical volatile content) and is therefore not attractive for the current thermal coal market.

The reconstituted product on the composite of the Sharon seam (#7 and #8) has an FSI of 4 with an ash of 7.02%. It is unlikely that the seam could be sold as a coking coal alone without blending.

D.H.s 83-17, 18 and 21

Drill Holes 83-17, 18 and 21 are all thought to have intersected the Brenda Seam. This is the thickest mineable seam and has therefore received the most attention.

The Brenda Seam shows considerable variation in profile and quality across the property. These variations display interesting relationships between volatile content, rank, maceral constituents and free swelling indices (Table 6).

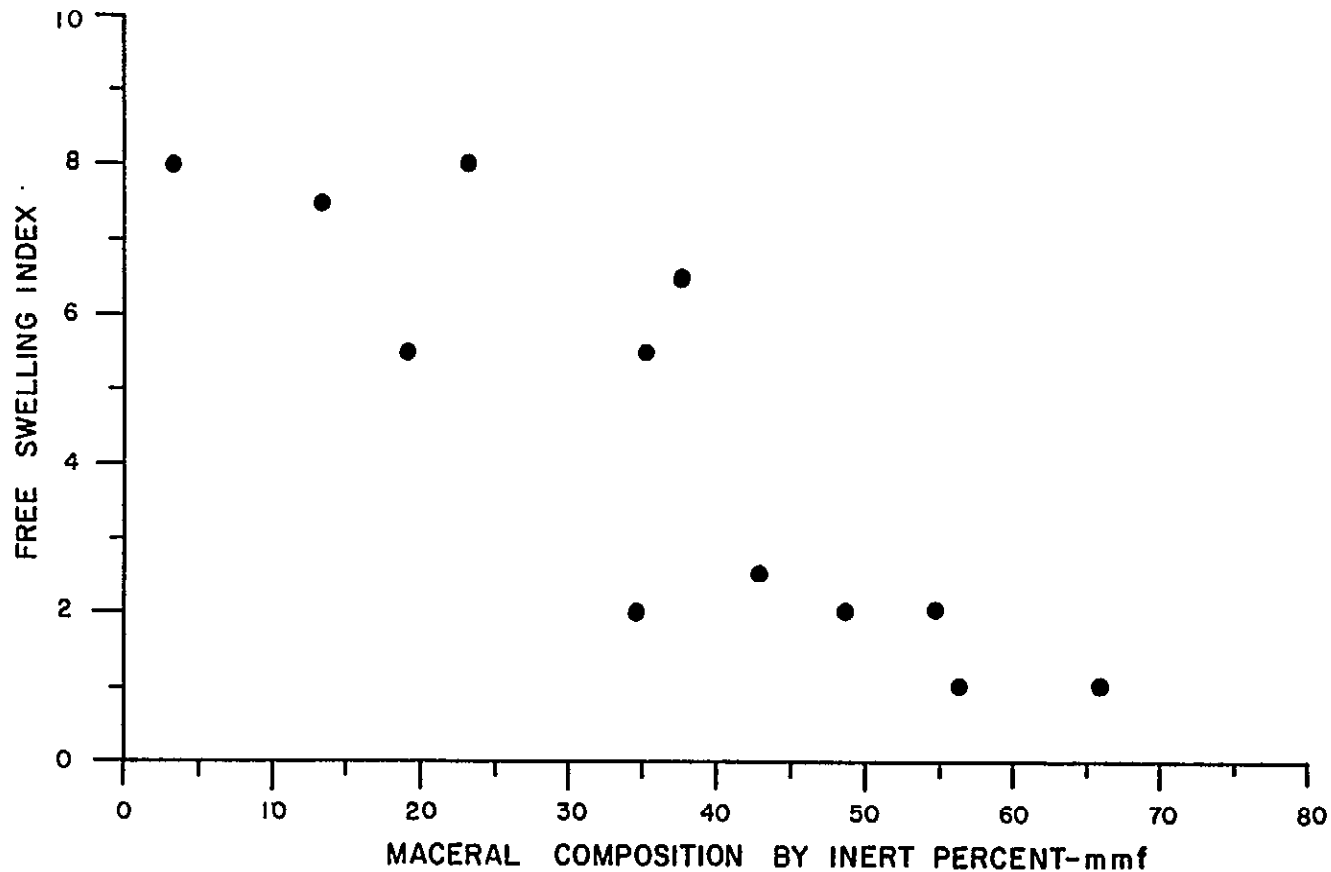
5.2 Rank

The rank of the Brenda Seam, as indicated by vitrinite reflectance, appears to be about the same in drill holes 83-17 and 21, while it is slightly lower in drill hole 83-18. Drill hole 83-18 is roughly midway between the other two holes (in the structural setting) both across the regional strike in a northeast-southwest direction and along strike in a northwest-southeast direction. A regional drop in rank is recorded within the inner foothills as the front ranges are approached (Karst and White, 1980). The high-low-high rank pattern recorded in the Brenda Seam across the Falling Creek property does not follow this regional trend and might suggest a syn-tectonic imposition of a geothermal gradient. The vitrinite reflectance profiles of the complete coal measures section, however, indicate a strong pattern of rank increasing with depth.

5.3 Coking

The Brenda Seam in drill hole 83-18 has not only a slightly lower rank, but also has good coking properties. The Free Swelling Index on the reconstituted product was 7 1/2 and the maximum Griesler Fluidity (DDM) was 88. The seam showed only weak coking properties where it was sampled elsewhere on the property.

For the Brenda seam a relationship exists between maceral composition expressed as percentage inerts and free swelling indices. This relationship is based, however, on only 12 data points and may explain why the points appear to show two separate trends (Figure 10). The plot indicates that coal with less than 30% inerts will have an FSI greater than 5, over 40% inerts an FSI less than 3 and where inerts are between 30% and 40%, the FSI may range from 2 to 6 1/2.



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J. HORGAN

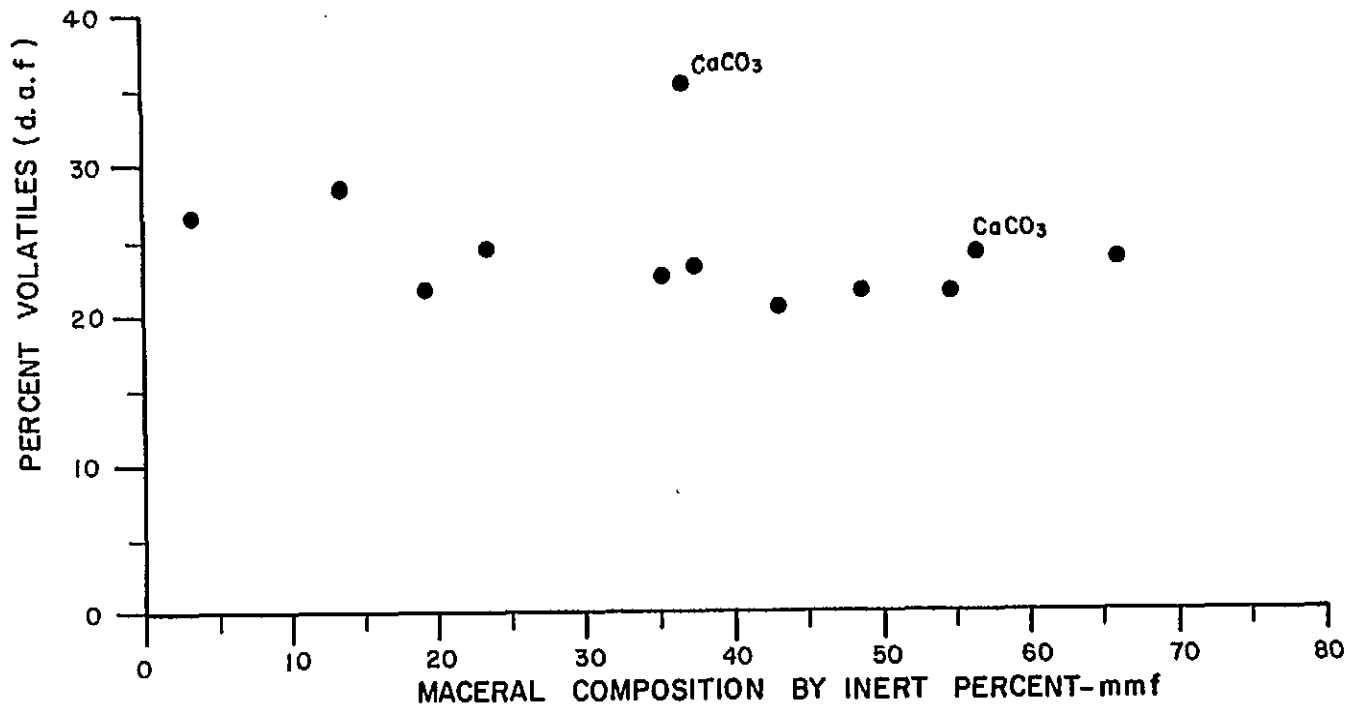
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DATE:
FEB. 1984

FILE NO.: 93-0-8
DRAWING NO.: 95

ESSO ESSO RESOURCES CANADA LIMITED
OIL SANDS, COAL AND MINERALS DEPARTMENT **ESSO**
COAL DIVISION

FALLING CREEK PROJECT
BRENDA SEAM
MACERAL COMPOSITION
vs. FREE SWELLING INDEX
Figure 10



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 J. HORGAN
 CHECKED BY:
 DATE:
 FEB. 1984
 FILE NO.: 93-0-8
 DRAWING NO.: 97

ESSO RESOURCES CANADA LIMITED
 OIL SANDS, COAL AND MINERALS DEPARTMENT
COAL DIVISION

FALLING CREEK PROJECT
 BRENDA SEAM
 MACERAL COMPOSITION
 vs. PERCENT VOLATILES
Figure II

In general, plies from the Brenda seam intersected in drill hole 83-18 show the lowest inert percentage. The Brenda seam in drill holes 83-17 and 21 also have individual plies with low to very low inert percentages; in both cases these plies also have FSI buttons over 5 1/2.

5.4 Volatile Matter

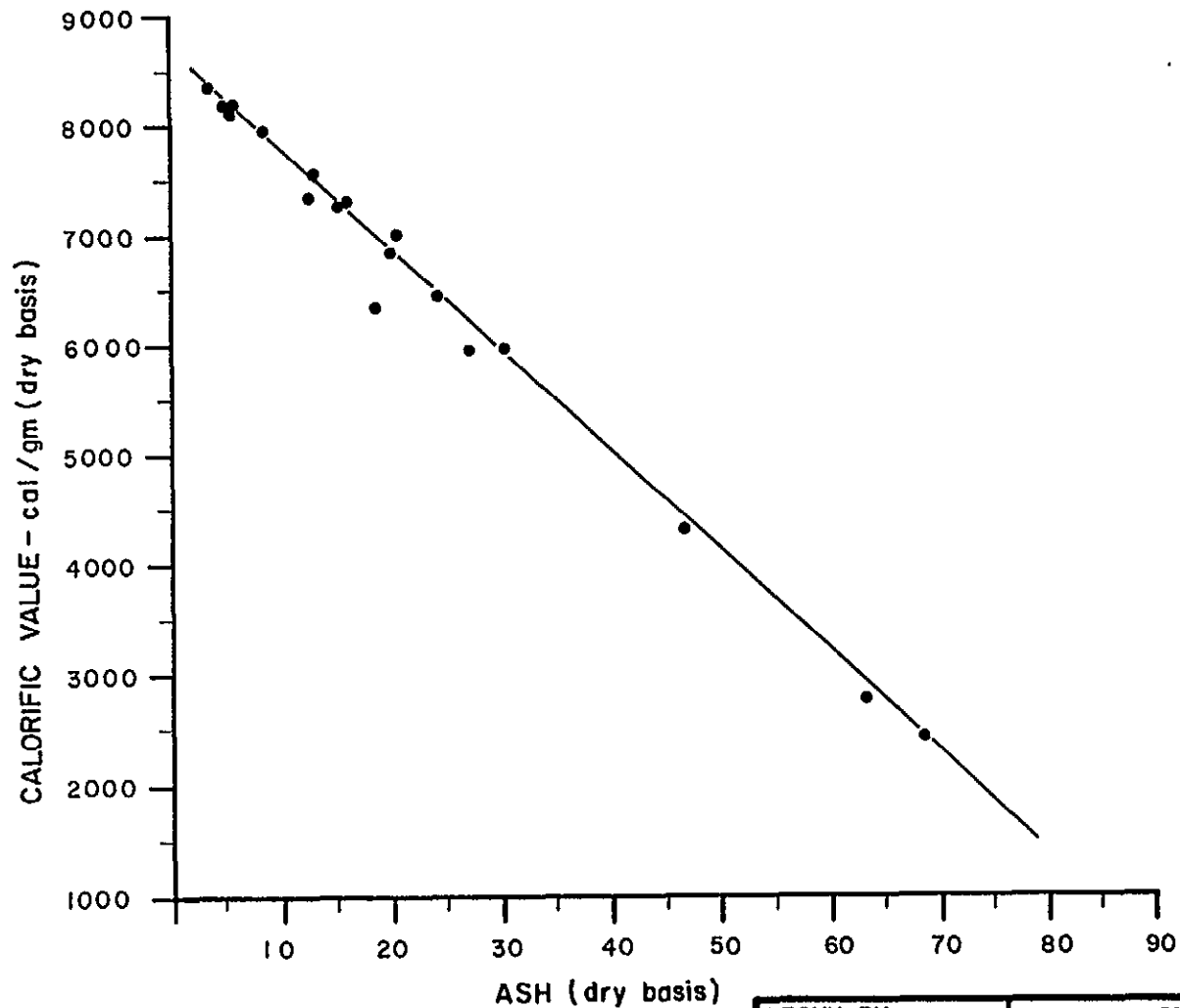
A plot of "maceral composition (by inert percentage) against volatile matter" indicates that inert percentages between 20 and 70 have the same range in volatile matter (from 20 to 25% V.M.) (Figure 11). Most of the inert constituents observed comprise semi-fusinite. The relationships between volatile matter, semi-fusinite and rank are not clearly understood.

Sample 83-21 ply 5 has a volatile matter content of 35 percent. The sample is rich in a form of "oolitic textured" calcite similar to that previously noted. It is presumed that CO₂ derived from the calcite has contributed to the volatile measurements. The lower C.V. for this sample might confirm this; (i.e. energy from the coal is being used to derive volatile matter from the rock.)

Conversely, sample 83-18 ply 11 has a volatile content of 28.66% which is interpreted to reflect the high vitrinite content of the sample rather than a contribution from the ash. Sample 83-21 ply 10 is almost pure vitrinite and has a low raw ash of 10% with a volatile matter of 27%, which is the prediction for pure vitrinite at this rank (Table 6).

5.5 Oxidation

The Brenda Seam in each of these three holes was intersected below 90 m depth of cover; the cover was almost entirely bedrock. While no weathering was observed in macroscopic examination of the cores, Jim Allan (EMC Research), who carried out the petrographic work,





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CHECKED BY:	
DATE: FEB. 1984	FALLING CREEK PROJECT BRENDA SEAM D. Hs. 83 - 21 83 - 18 83 - 17
FILE NO.: 93-0-8 DRAWING NO.: 96	ASH vs. CALORIFIC VALUE

Figure 12

reported that all the vitrinite showed some degree of oxidation. Additionally, some seams, particularly in D.H. 83-17, were subjected to severe tectonic strain. Multiple shearing surfaces in the coal were noted from D.H. 83-17.

Before any conclusions are drawn it should be noted that no attempt was made to calculate the volatile matter on a mineral matter free basis and no account was made for the effects of tectonics and oxidation.

5.6 Coal Quality

From a practical sense, the coal should be simple to prepare. For example, the composite of the mining interval from the Brenda Seam from D.H. 83-21 had only 11% Ash in the raw head sample. Assuming 2% dilution and 7% as shipped moisture, the C.V. would be 12,285 Btu/lb. At a 1.8 S.G. separation, the cumulative floats are 91.56% with an ash of 5.34%. Assuming the same dilution and moisture the C.V. would become 13,186 Btu/lb.

The Hardgrove Grindability Index (HGI) of the coal ranges from 67 to 83. This indicates that the coal is relatively soft and is likely to separate from mudstone partings in a breaker.

5.7 Conclusions

Vitrinite reflectance from the Brenda Seam indicates a medium volatile bituminous rank; however, the analytical percentage of volatile matter is less than 23% d.a.f. (for seam composites from D.H. 83-17 and 21.) indicating a low volatile bituminous rank. Possible explanations for the variation in volatile content and rank calculations may be the high inert content in the coal maceral constituents, and the pervasive oxidization of the coal which may in turn be related to the tectonics of the area.

The coal is not immediately attractive as a thermal coal but it may have a number of applications as a blend product. Isolated seams have good coking qualities, but they are determined to be uneconomic.

5.8 Discussion

Numerous aspects of the geology in the Peace River coal field have been addressed, however, little attention has been paid to the coal quality and rank distribution of the coals. Karst and White report the following observations from a preliminary rank map:

- "1. Coal rank increases slowly but steadily from the undisturbed plains region of northeast British Columbia to the structural margin of the foothills belt.

This phenomena is due to the geometry of the sedimentary basin and its resultant increase in depth of cover encountered by a specific horizon. . .

2. The increase in coal rank accelerates at the first sign of tectonism and quickly peaks in the deep subsurface of the northeastern boundary of the foothills

. . . The piling-on effect of crustal shortening (stacked thrusts), the frictional heat of rock deformation and failure, and the relative deep position within the sedimentary wedge (before tectonism) would all contribute to these high coal rank values.

3. After reaching its peak at the structural front, coal rank decreases sharply in a southwesternly direction within the foothills belt itself.

The immediate implication is that much of the coalification undergone by these coals is postorogenic.
 . . ."³

In an effort to understand the coal quality and rank variations within the Falling Creek property, careful attention has been given to coal sampling and analysis. Since 1982 samples have been collected from every seam intersected in drilling. Vitrinite reflectance estimates have been determined on approximately half the samples from each drill hole selected for rank analysis.

The vitrinite reflectance graphs (Ro vs. depth) vary from well defined straight line gradients to random point plots.

When these graphs are analyzed in conjunction with dip meter plots from the same drill holes, some interesting interpretations result. In some cases structural breaks coincide exactly with breaks in the vitrinite reflectance gradients, in other instances where faulting is known to break the stratigraphic section well defined straight line plots can be drawn through the vitrinite reflectance points. These two cases may be interpreted as examples of both pre-tectonic and post-tectonic coalification. This situation indicates that much additional work is needed before we can determine the timing of coalification or use vitrinite reflectance as an exploration tool on the Falling Creek property.

Other vitrinite reflectance plots (Ro vs. depth below Moosebar) indicate that rank increases across strike from east to west.

To study the effects of composition on coal rank, coal from the same stratigraphic horizon is needed; to date we have been unable to collect more than three samples from any one correlated seam. With this limited data no conclusions have been attempted.

6.0 Reserves

Nine widely spaced reserve areas have been delineated from surface mapping, drill hole intersections and structure contours. In areas where only one or two drill holes exist, extra caution was exercised in the correlation and projection of drill hole data.

Stringent criteria were applied to determine mineable seam thicknesses. In most cases the minimum thickness of the seam was used in reserve calculations.

Reserves were calculated for an open pit mine model with a 10:1 high wall ratio. Overall stripping ratios indicate that only three out of the nine reserve areas can be economically mined at a maximum overall strip ratio of 6:1 (m³/tonne). Details of the three reserve area calculations are summarized in Table 7.

The three mineable reserve areas are located in the southern portion of the property and total 11 million clean tonnes. Reserves from the other six areas have been included in the total resource figure of 77 million tonnes.

TABLE 7
RESERVE AREA SUMMARY

Seam	Reserve Area	Geologic Thickness	Dilution Mining Loss	S:G.	Yield	Clean Coal Tonnage Factor	Drill Hole Intersected	Clean Coal Tonnage (reserve)	Total Overburden (reserve)	Overall Ratio (reserve)	High Wall Ratio Clean	Total Coal (resource)	Total Overburden (resource)	Total Ratio
Brenda #2	83-21	5.6	15%	1.4	90%	6	83-21	3.65 Mt	22.9 M m ³	5.9:1	10:1	4.32 Mt raw 0.30 Mt raw	22.9 m ³	5.0:1 Bcm/RMT
Dave	75-3	3.7	15%	1.5	75%	4.05	75-3	4.46 Mt	19.4 M m ³	4.35:1	10:1	12.8 Mt clean 20.7 Mt raw	189.9 M m ³	14:1 Bcm/CMT 9:1 Bcm/RMT
Brenda	1982 Area	5.47	15%	1.5	75%	5.4 & 5.3	82-2 82-11	1.42 Mt	5.40 M m ³	2.5-5.2:1	10:1	3.85 Mt raw	16 M m ³	7:1 Bcm/CMT
Twin	1982 Area	3.89	15%	1.5	75%	3.75	82-2 81-2	0.53 Mt	3.11 M m ³	4.6-5.4:1	10:1	4.48 Mt raw	--	--
Dave	1982 Area	1.38	15%	1.5	75%	1.57	82-1	0.12 Mt	0.60 M m ³	4.7-6.6:1	10:1	5.15 Mt raw	--	--
Dave	1982 Area Sect. 8	1.93	15%	1.5	75%	2.2	82-3	0.28 Mt	3.33 M m ³	4.8:1	10:1	0.47 Mt raw	--	--
Rat	1982 Area Sect. 8	2.08	15%	1.5	75%	2.43	82-3	0.40 Mt				0.56 Mt raw	--	--
TOTAL								11.09 Mt	54.76 M m ³			39.83 Mt raw		

7.0 Mineability

Coal reserves underlying the Falling Creek property are considered surface mineable only. The geology is structurally complex and limits the extent of the surface mineable areas. Structures within the property vary from gently dipping fold pairs in the south to vertical and overturned fold limbs in the north. Minor faulting occurs in many of the folds.

A small scale truck and shovel style operation has been modelled for the property. Numerous small pits would be worked throughout the life of the mine. Because the coal is relatively clean and easily separated from partings, a simple breaker system may be adequate for cleaning.

A total resource of 77 M tonnes has been calculated from five coal seams present in various areas of the property. Mineable reserve tonnage is estimated to be 11 million clean tonnes.

Low to medium volatile coals are not easily marketable in the current coal market. Without firm markets it is difficult to initiate any coal project. Until the economics of the current supply and demand situation change it is not recommended to begin detailed mineability studies and development drilling.

FALLING CREEKCOST INCURRED

1983

<u>Activity</u>	<u>Vendor</u>	<u>Amount</u>
Logging	BPB Instruments (Canada) Ltd.	\$ 40,209.85
Coring	Wayne Asleson Trucking	486.00
	Robinson's Camera Centre	55.00
	Motorways	25.35
Site Preparation	Peace Dozing & Contracting Ltd.	6,718.05
Drilling	Connors Drilling Ltd.	187,418.01
	Esso Petroleum Canada	380.18
	Peace Dozing & Constructing Ltd.	487.50
	Chetwynd Motors (1970) Ltd.	1,887.20
	Canadian Mud Lab. Chemical & Manufacturing Ltd.	234.00
	Baroid of Canada Ltd.	58.30
Camp Costs	Peace Country Rentals Chetwynd Ltd.	92.26
	BC Hydro & Power Authority	93.66
	Motorways	77.40
	BC Telephone Company	607.90
	Ribtor Mfg. & Distributing Co. Ltd.	145.40
	Majestic Management (1981) Ltd.	79.20
Clean-up	Peace Dozing & Contracting Ltd.	1,155.00
Travel	Meals & Transport	5,853.91
	Employee Accommodation	12,174.97
Misc. Materials and Repairs	Chetwynd Motors (1970) Ltd.	77.60
	Northwest Tent & Awning Co. Ltd.	41.40
	Loomis Courier Service Ltd.	23.65
	Willson Office Specialty Ltd.	19.98
	Caldraft (1977) Ltd.	60.00
	AMF Geo. Space Canada Ltd.	261.28
	Robinsons Camera Centre	27.93
	Petrocraft Products Ltd.	144.00
	Kodak Canada Ltd.	101.73
Communications	Petron Communications Ltd.	1,325.92
	Helicon Avionics	716.04
	Alberta Government Telephones	349.31
	Northwestel	57.01
	BC Telephone Company	828.57

Project Administration	BC Hydro & Power Authority	90.58
Vehicle Rentals	Rentway Canada Ltd.	5,080.80
	CVL Incorporated	281.00
Helicopter	Highland Helicopters Ltd.	1,990.14
	Northern Mountain Helicopters Inc.	111,239.08
	Okanagan Helicopters Ltd.	11,486.52
Coal Analysis	Loring Laboratories Ltd.	11,730.00
Maps & Reports	Rileys Reproduction & Printing Ltd.	491.28
<u>Inter-Dept. Charges</u>		
Systems & Computer Services		2,136.00
Salaries, Wages & Benefits		94,077.00
Research Internal		1,080.00
Surface & Claims Dept.		520.00
Print & Reproduction		2,827.00
Information Services - Computer Time		550.00
<hr/>		
Total Direct Expenditures		505,852.96
20% Office Overhead		101,170.59
Total Expenditures		<u>\$607,023.55</u>

1531K

FALLING CREEK
COST INCURRED
1984
JANUARY - APRIL

<u>ACTIVITY</u>	<u>VENDOR</u>	<u>AMOUNT</u>
Helicopter	Highland Helicopters Ltd.	\$ 485.40
Maps & Reports	Province of B.C.	5.00
<u>Inter-Departmental Charges</u>		
Drafting & Reprographics		9,853.86
Salaries, Wages & Benefits		19,196.00
Computer Charges		665.74
<hr/>		
Total Direct Expenditures		30,206.00
20% Office Overhead		6,041.20
<hr/>		
Total Expenditures		<u><u>\$36,247.20</u></u>

9.0 Conclusions

The most important coal bearing formation underlying the Falling Creek property is the Gething Formation. Coal seams occur throughout the formation but are most abundant in the upper half. The Brenda seam is the only consistently correlatable seam across the property. It is a low to medium volatile coal up to 1.0 meters thick. The Brenda seam and four other locally persistent seams comprise the mineable reserves for the property. These seams have been intersected in drilling and trenched in outcrop. The coal is considered to be a thermal blend product.

Preliminary reserve calculations for an open pit truck and shovel operation indicate that the southern portion of the property is the most feasible for coal mine development.

The coal resource has been estimated at 77 million tonnes. The mineable reserves are conservatively determined to be 11 million clean tonnes.

Extensive drilling is required to confirm present reserve areas and further determine the mining potential of the property.

10.0 Recommendations

1. Exploration should continue in the southern reserve areas where open pit mine development is thought to be feasible.
2. Twenty to thirty drill holes will be required for stratigraphy, structure, coal quality and engineering studies.
3. Other areas of the property should be evaluated for additional reserve areas.
4. Research is required to determine the blend capabilities of the Falling Creek coal and the marketing potential of thermal blend coals.
5. Many important aspects of the stratigraphy, structure and coal quality of the Peace River coalfield are yet to be resolved. Co-operative research between government and industry is required to resolve the varied geologic problems within the coal field.

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R.A. Price and R.J.W. Douglas, ed;
Spec. Paper No. 11, p. 1-82.

STATEMENT OF PROFESSIONAL QUALIFICATION

Louise E. Klatzel Mudry, P. Geol.

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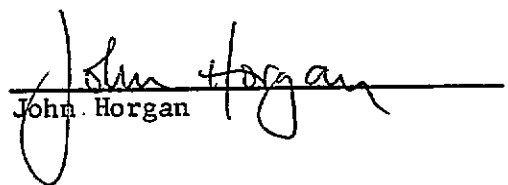
Employee of Esso Resources Canada Ltd. since May 1981.
Present title: Area Geologist

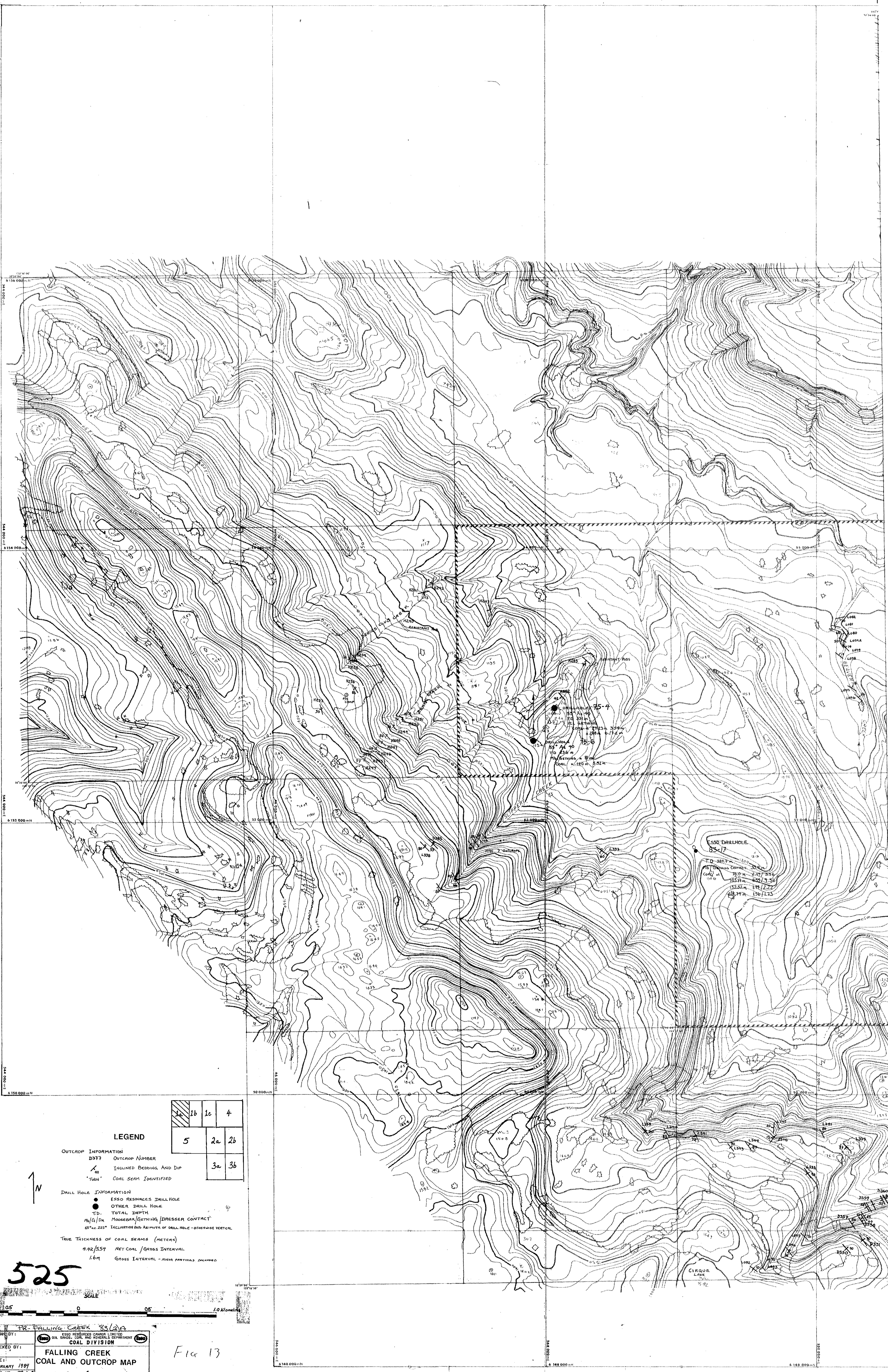
John Horgan, P. Geol.

Graduated from University of Sheffield, Sheffield England, B.Sc. Geology, 1974.

Employee of Esso Resources Canada Ltd. since Nov. 1980.
Present title: Area Geologist


L.E. Klatzel Mudry


John Horgan



1a	1b	1c	4
5	2a	2b	
	3a	3b	

LEGEND

- OUTCROP INFORMATION**
- D377 OUTCROP NUMBER
 - INCLINED BEDDING AND DIP
 - "THIN" COAL SEAM IDENTIFIED
- DRILL HOLE INFORMATION**
- ESSE RESOURCES DRILL HOLE
 - OTHER DRILL HOLE
 - T.D. TOTAL DEPTH
 - M/G/DK MOOSEBAR/BETHING/DRESSER CONTACT
 - 65° az. 225° INCLINATION AND AZIMUTH OF DRILL HOLE - OTHERWISE VERTICAL
- TRUE THICKNESS OF COAL SEAMS (METERS)**
- 4.42/254 NET COAL /GROSS INTERVAL
 - 1.6M GROSS INTERVAL - AREA RATINGS EXCLUDED

ESSE DRILLHOLE 85-17

T.D. 382.7	100	2.9
M/G Contact 33.0		
Coal at 76.0	2.47	2.56
104.0	2.92	1.56
132.52	1.91	1.22
218.74	1.56	1.15

525

PR - FALLING CREEK 83(2)A

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COAL DIVISION

CHECKED BY:

DATE: FEBRUARY 1989

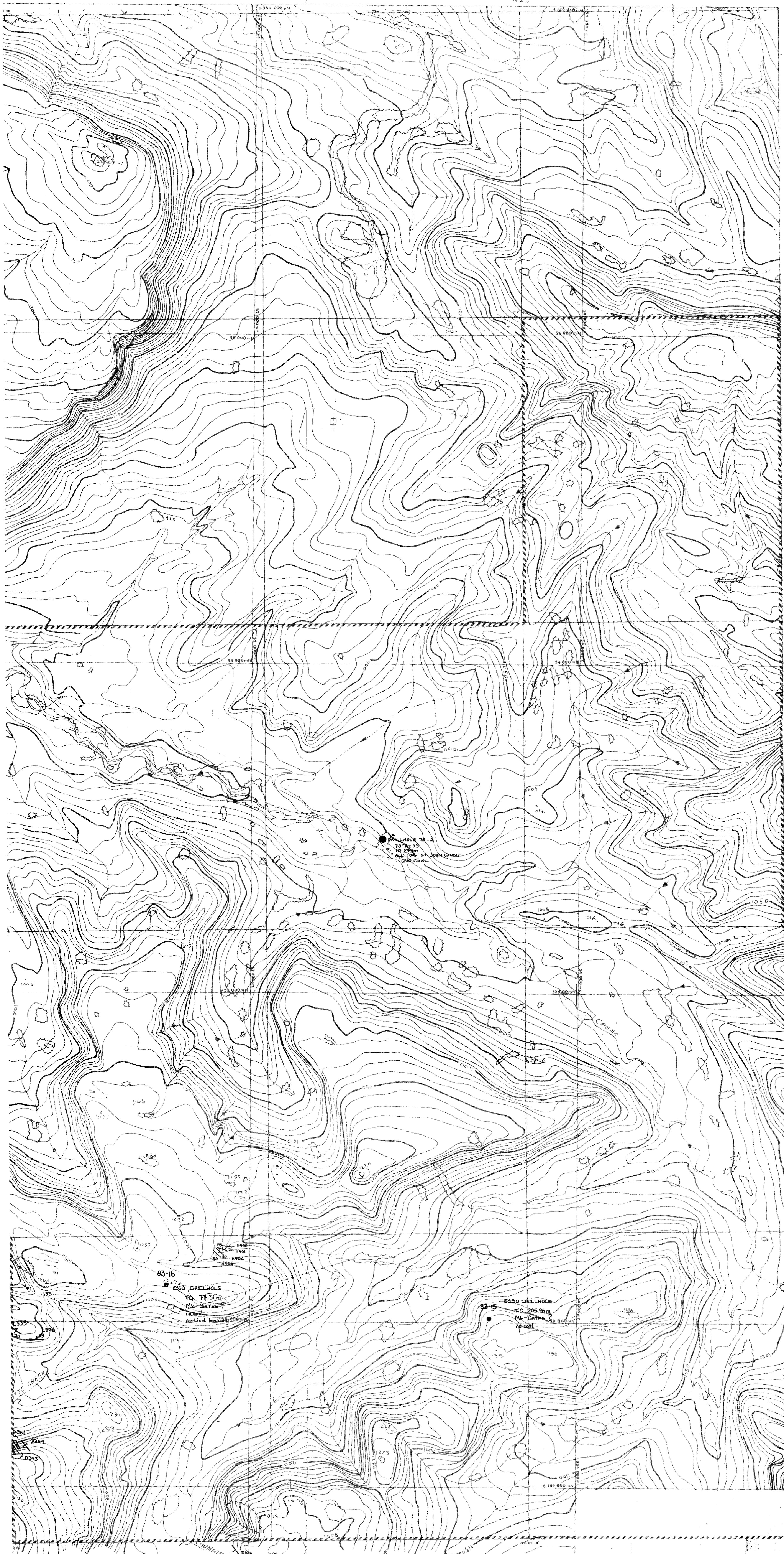
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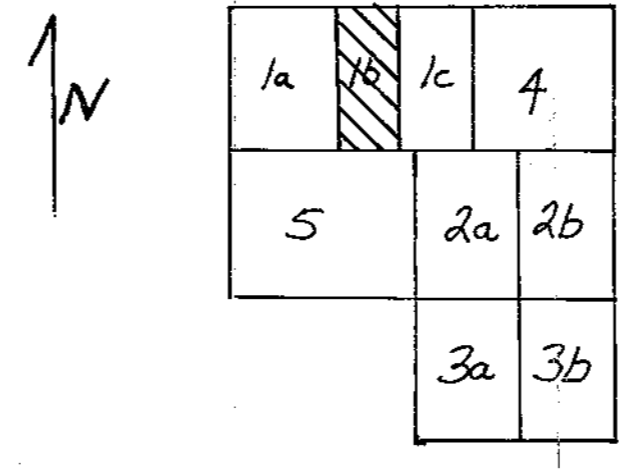
**FALLING CREEK
COAL AND OUTCROP MAP**

MAP SHEET 1a

Fig 13



PR-FALLING CREEK 83(2)A
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 DATE: FEBRUARY 1984
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 ESSE RESOURCES CANADA LIMITED
 OIL SANDS, COAL AND MINERALS DEPARTMENT
 COAL DIVISION
 FALLING CREEK
 COAL AND OUTCROP MAP
 MAP SHEET 16 FIG 14



LEGEND

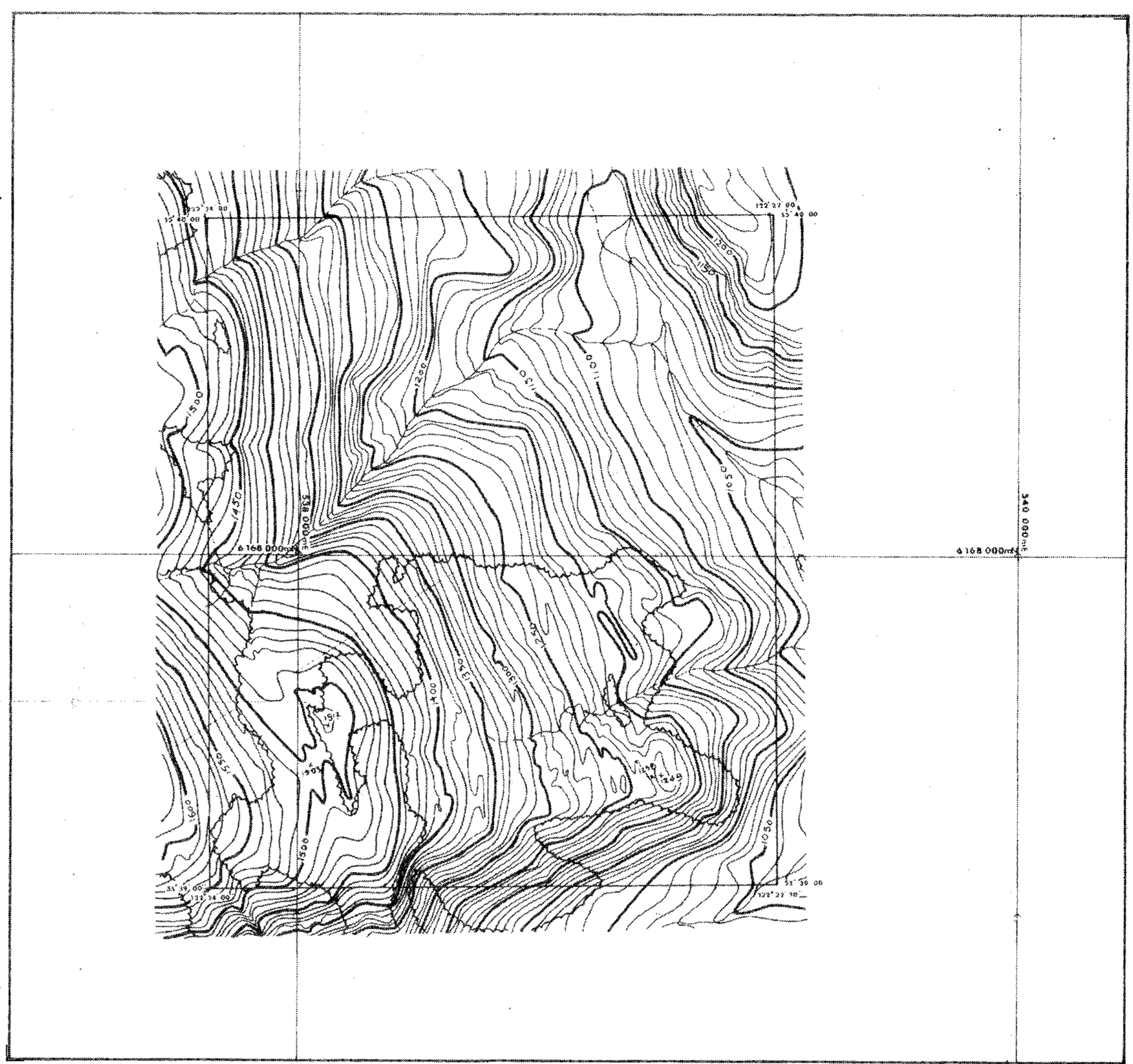
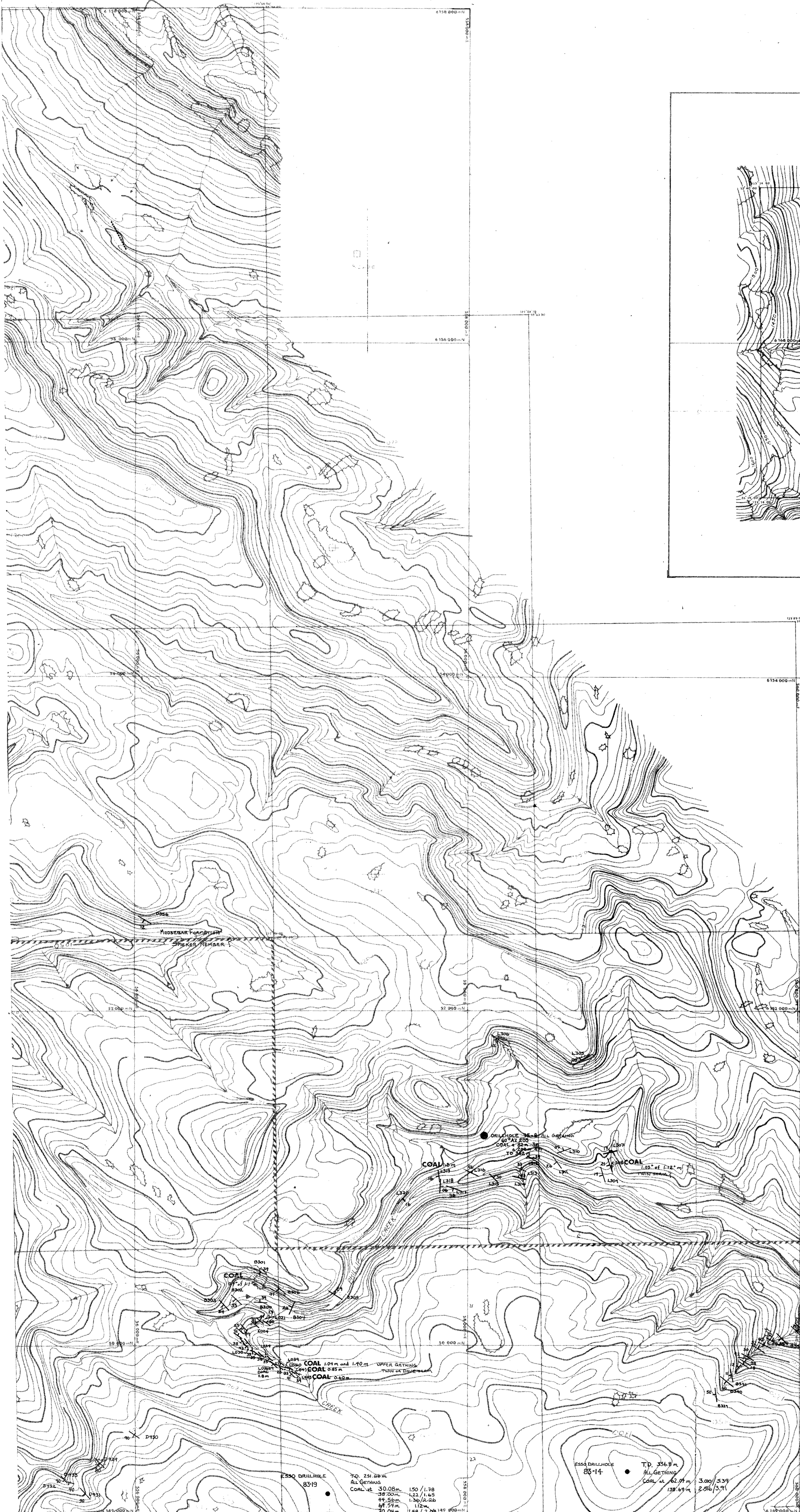
OUTCROP INFORMATION
 3377 OUTCROP NUMBER
 / INCLINED BEDDING AND DIP
 TURN COAL SEAM IDENTIFIED

DRILL HOLE INFORMATION
 ● ESSE RESOURCES DRILL HOLE
 ○ OTHER DRILL HOLE
 TD TOTAL DEPTH
 M/G/Da PROBABLY/GETTING/DRESSER CONTACT
 8° or 228° INCLINATION AND AZIMUTH OF DRILL HOLE - STORAGE NETWORK

TRUE THICKNESS OF COAL SEAMS (METERS)
 9.92/254 NET COAL / GROSS INTERVAL
 1.64 GROSS INTERVAL - FROM PROBABLY DRILLING

FIG 14
 PR-FALLING CREEK 83(2)A
 SCALE

525



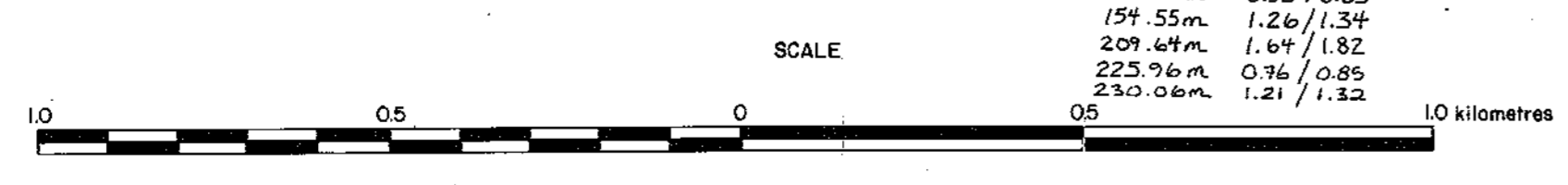
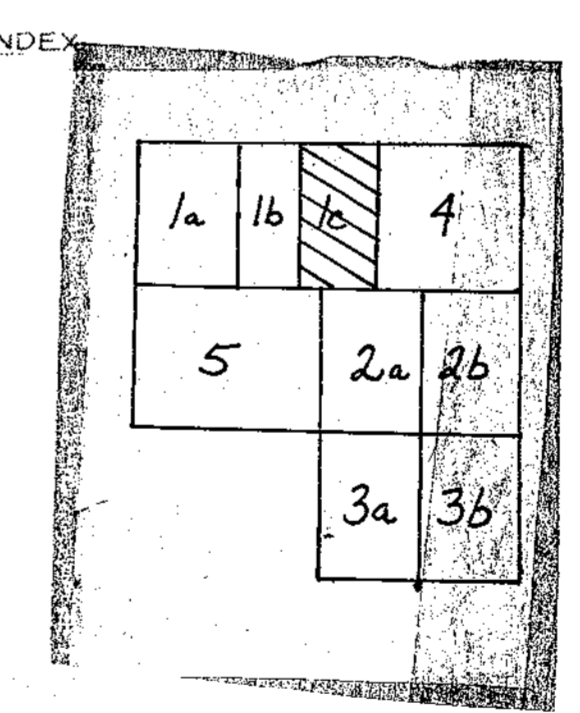
LEGEND

- OUTCROP INFORMATION**
- DS?? OUTCROP NUMBER
 - INCLINED BEDDING AND DIP
 - *TUM* COAL SEAM IDENTIFIED
- DRILL HOLE INFORMATION**
- ESSO RESOURCES DRILL HOLE
 - OTHER DRILL HOLE
 - T.D. TOTAL DEPTH
 - M/G/Dn MODES/GETTING/DRESSER CONTACT
 - 87°-22' INCLINATION ASSUMED IF DRILL HOLE - OTHERWISE NOTED
- TRUE THICKNESS OF COAL SEAMS (METERS)**
- 9.92/5.54 NET COAL /GROSS INTERVAL
 - 1.6m GROSS INTERVAL - MINN. PARTIALS ALLOWED

ESSO MINERALS CANADA
 ESSO RESOURCES CANADA LIMITED

FORM LINE INTERVAL 10 metre
 SURVEY NOTE: SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM

- LEGEND**
- MAIN ROAD
 - SECONDARY ROAD
 - TRACK
 - TRAIL
 - CUT LINE
 - RAILROAD
 - BUILDING
 - COAL LICENCE
 - RIVER
 - STREAM
 - LAKE
 - SAND
 - FREE LINE
 - FORM LINES
 - DEPRESSION FORMLINE
 - SPOT HEIGHT

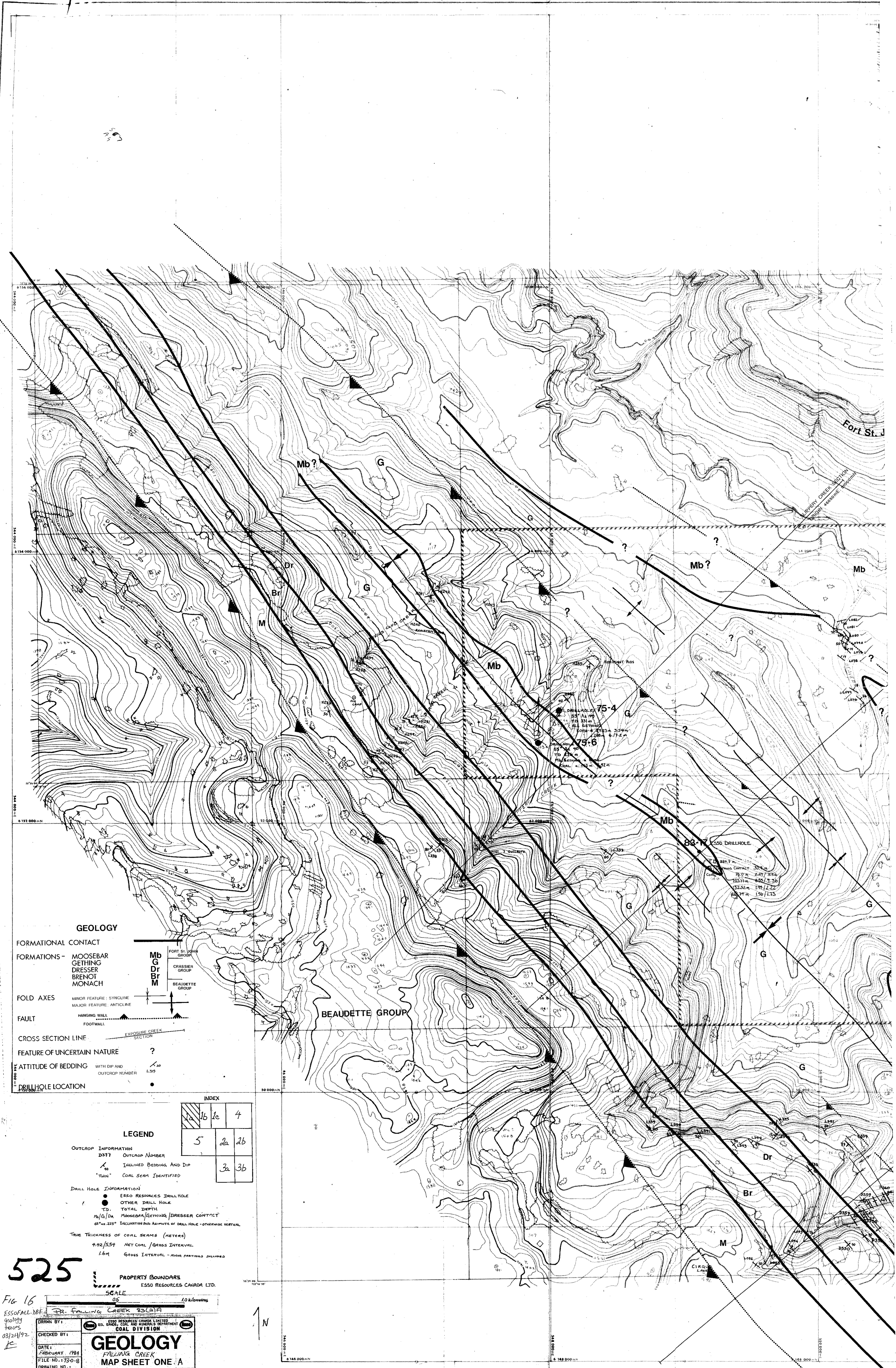


ESSO DRILL HOLE	T.D.	ALL GETTING	NET COAL	GROSS INTERVAL
8519	20.24	1.50	1.78	1.50
	30.08	2.21	1.45	1.45
	38.50	3.00	1.26	1.26
	46.59	3.79	1.07	1.07
	54.59	4.58	0.88	0.88
	62.59	5.37	0.69	0.69
	70.59	6.16	0.50	0.50
	78.59	6.95	0.31	0.31
	86.59	7.74	0.12	0.12
	94.59	8.53	0.00	0.00

Fig 15

525

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GEOLOGY

FORMATIONAL CONTACT

FORMATIONS - MOOSEBAR
GETHING
DRESSER
BRENOT
MONACH

FOLD AXES
MINOR FEATURE: SYNCLINE
MAJOR FEATURE: ANTICLINE

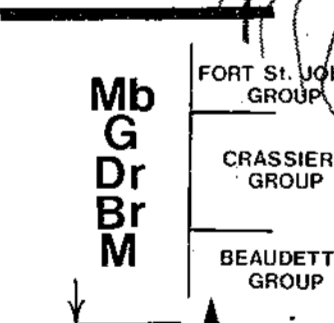
FAULT
HANGING WALL
FOOTWALL

CROSS SECTION LINE
EXPOSURE CREEK SECTION

FEATURE OF UNCERTAIN NATURE ?

ATTITUDE OF BEDDING WITH DIP AND OUTCROP NUMBER

DRILLHOLE LOCATION



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LEGEND

OUTCROP INFORMATION
D377 OUTCROP NUMBER
/ 90 INCLINED BEDDING AND DIP
"TWIN" COAL SEAM IDENTIFIED

DRILL HOLE INFORMATION
● ESSO RESOURCES DRILL HOLE
● OTHER DRILL HOLE
TD. TOTAL DEPTH
Mb/G/Dr MOOSEBAR/GETHING/DRESSER CONTACT
65° to 225° INCLINATION AND AZIMUTH OF DRILL HOLE - OTHERWISE VERTICAL

TRUE THICKNESS OF COAL SEAMS (METERS)
4.92/5.54 NET COAL /GROSS INTERVAL
1.6M GROSS INTERVAL - MINOR PARTINGS INCLUDED

525

PROPERTY BOUNDARY
ESSO RESOURCES CANADA LTD.

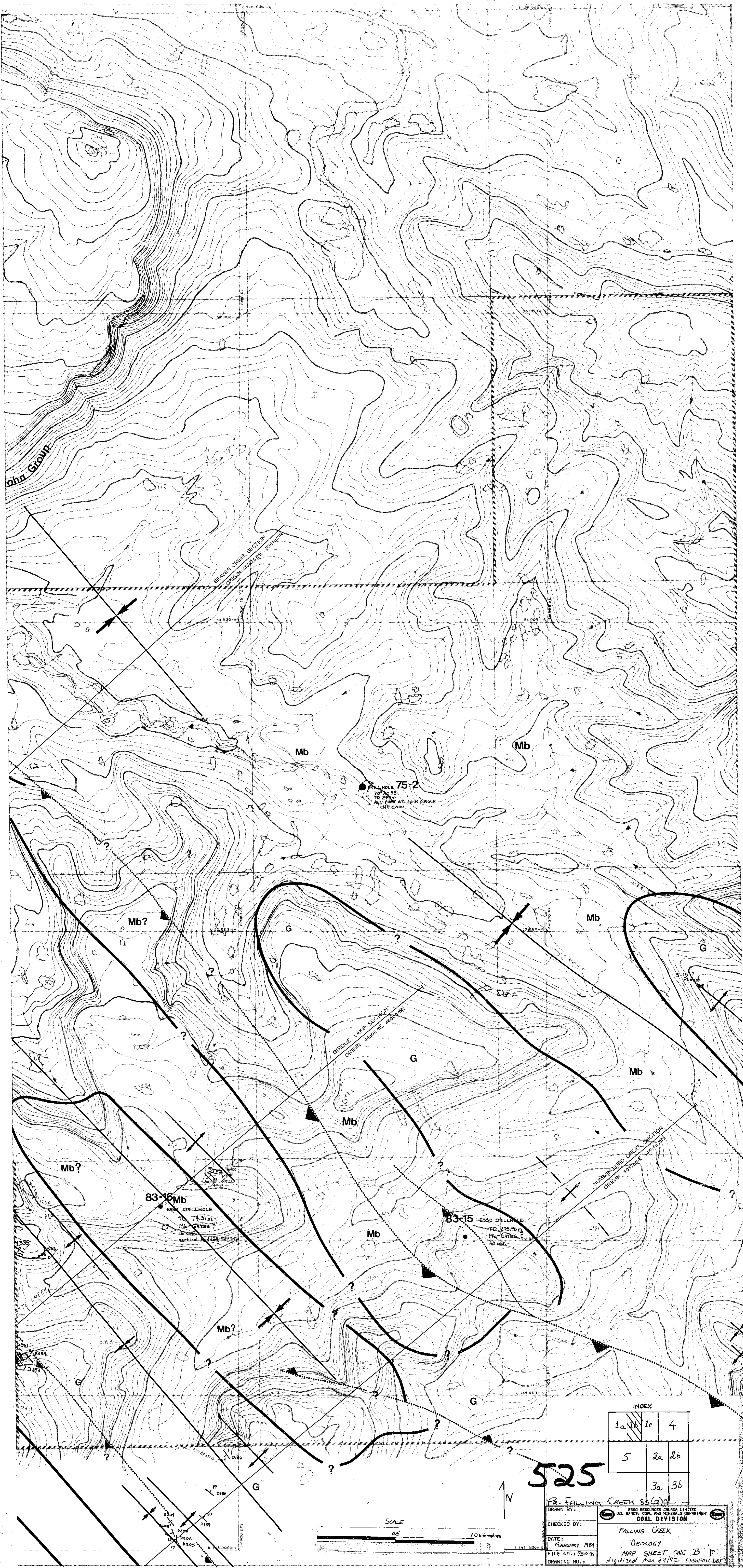
SCALE
05 10 Kilometers

Fig 16
ESSO/CAL/88F
Geology
Map
03/24/92
1c

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OIL, GAS AND MINERALS DEPARTMENT
GEOLOGY
FALLING CREEK
MAP SHEET ONE, A

Digitized Apr. 25/91 P25

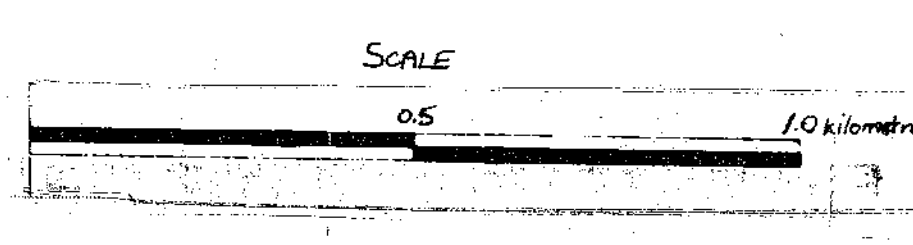


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ESSEX OIL SANDS PROJECT
 COAL DIVISION
 FALLING CREEK
 GEOLOGY
 MAP SHEET ONE B 1c
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GEOLOGY

FORMATIONAL CONTACT

FORMATIONS - MOOSEBAR
 GETHING
 DRESSER
 BRENOT
 MONACH

FOLD AXES

FAULT

CROSS SECTION LINE

FEATURE OF UNCERTAIN NATURE

ATTITUDE OF BEDDING

DRILLHOLE LOCATION

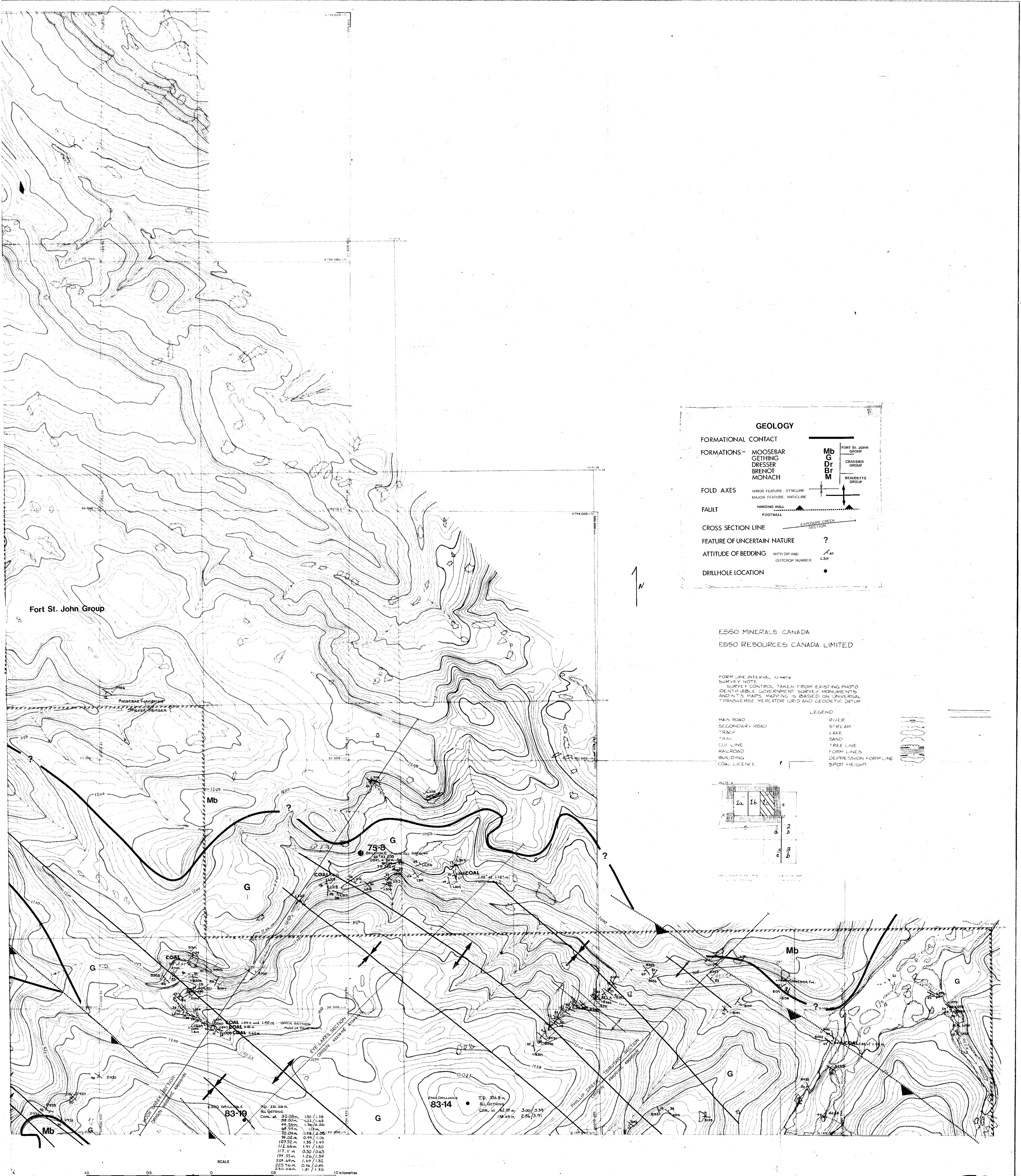
MINOR FEATURE: SYNCLINE
 MAJOR FEATURE: ANTICLINE
 HANGING WALL
 FOOTWALL

EXPOSURE CREEK SECTION

Fort St. John Group
 Crassier Group
 Beauvette Group

WITH DIP AND
 OUTCROP NUMBER

FIG 17 Digitized Apr 25/91 R.S.



525

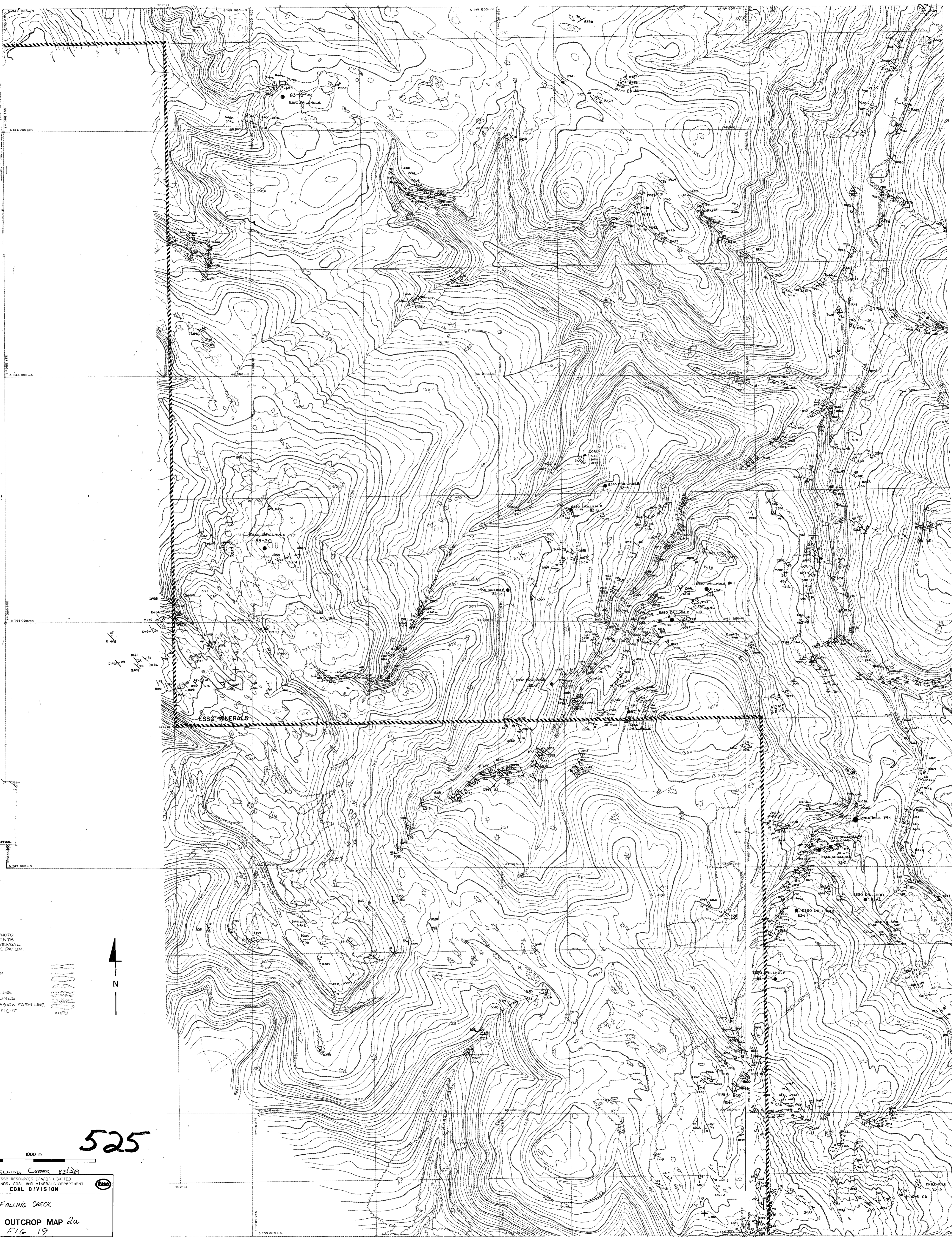
ES&O FALL DDF
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03/10/2002

FR-FALLING CREEK 83(2)A

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OIL SANDS, COAL AND MINERALS DEPARTMENT
COAL DIVISION
FALLING CREEK
GEOLOGY
MAP SHEET ONE C
FIG 18

Digitized Apr 25/91
RS



LEGEND

OUTCROP INFORMATION
 D317 Outcrop Number
 / Incline Bearing and Dip
 "Tm" Coal Seam Identified

DRILL HOLE INFORMATION
 ● ESSO RESOURCES DRILL HOLE
 ○ OTHER DRILL HOLE
 TD TOTAL DEPTH
 M/G, DA MESSIAH/GEMING/DRESSER CONTACT
 25" x 25" INCLINATION AND DEPTH OF DRILL HOLE - OTHERWISE NOTED

TRUE THICKNESS OF COAL SEAMS (METERS)
 9.92/559 NET COAL/GROSS INTERVAL
 1.6M GROSS INTERVAL - MINERALS INCLUDED

PINE PASS PROJECT

SCALE 1:10,000 (approx)
 FORM LINE INTERVAL 10 METERS
 SURVEY NOTE
 SURVEY CONTROL TAKEN FROM EXISTING PHOTO
 IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS
 AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL
 TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

LEGEND

MAIN ROAD	SHRUB
SECONDARY ROAD	STREAM
TRAIL	LAKE
CUTLINE	SAND
RAILROAD	TREE LINE
BUILDING	FORM LINES
COAL LICENCE	DEPRESSION FORM LINE
	SPOT HEIGHT

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			b

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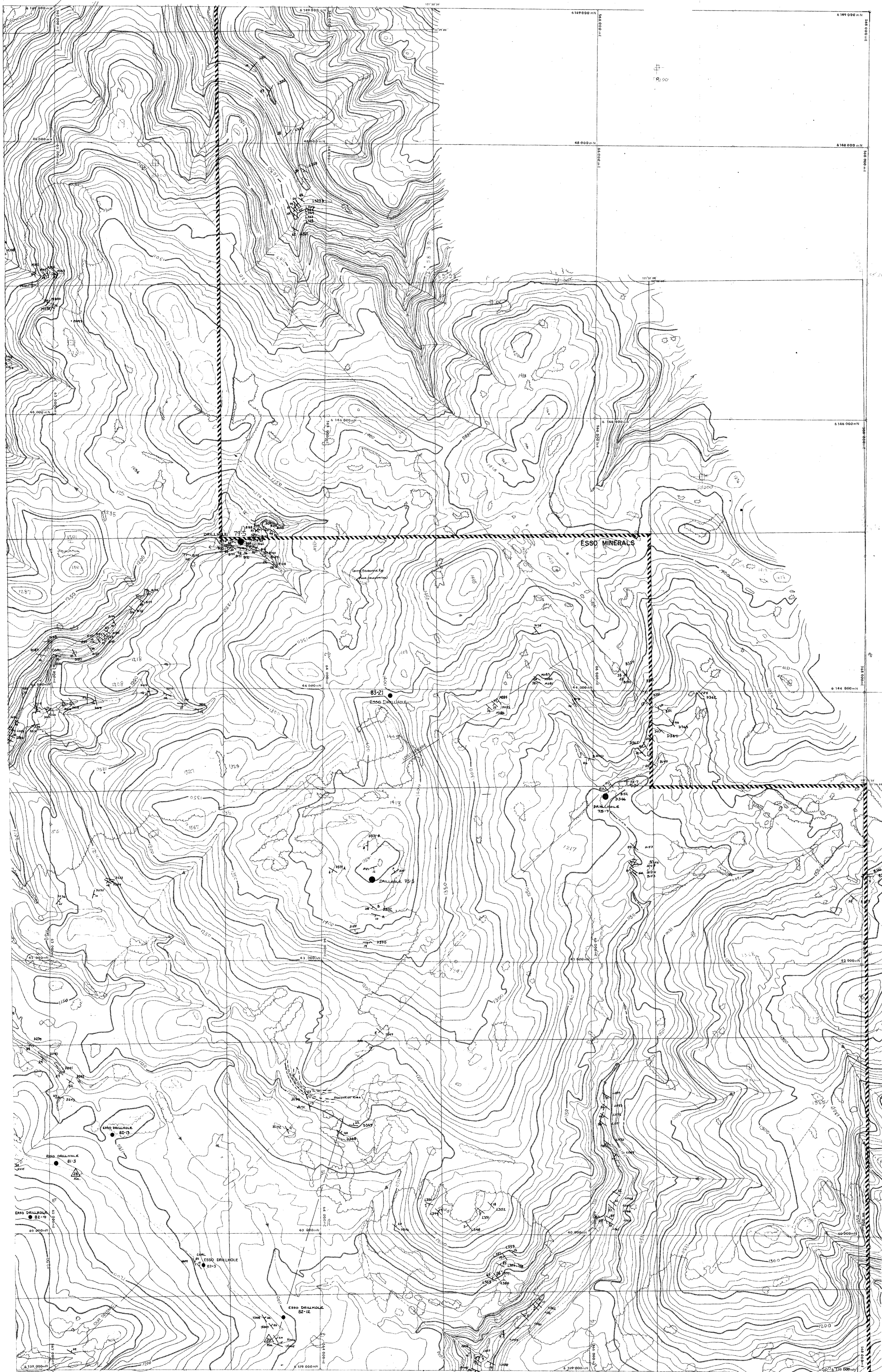
1000 m

PR-FALLING CREEK 82/DA

ESSO RESOURCES CANADA LIMITED
 OIL SANDS, COAL AND MINERALS DEPARTMENT
COAL DIVISION

FALLING CREEK
OUTCROP MAP 2a
 FIG 19

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 DATE:
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 FILE NO.: 93-0-8
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GEOLOGY

FORMATIONAL CONTACT

FORMATIONS - MOOSEBAR
GETHING
DRESSER
BRENOT
MONACH

FOLD AXES
MINOR FEATURE: SYNCLINE
MAJOR FEATURE: ANTICLINE

FAULT
HANGING WALL
FOOTWALL

CROSS SECTION LINE

FEATURE OF UNCERTAIN NATURE ?

ATTITUDE OF BEDDING WITH DIP AND OUTCROP NUMBER

DRILLHOLE LOCATION

PA - FALLING CREEK 830249

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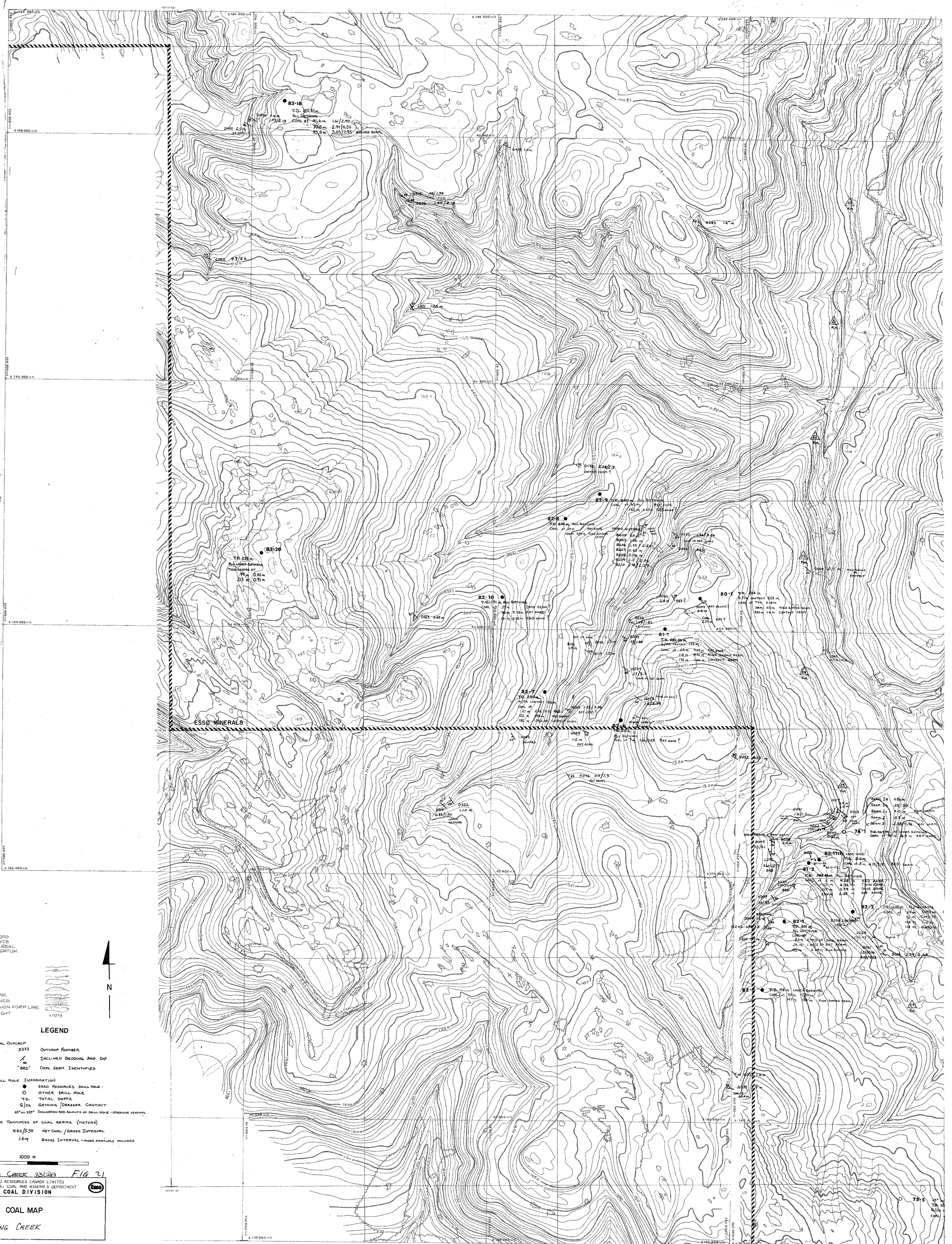
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FIG 20

SCALE 1000 METERS

525



PINE PASS PROJECT

SCALE 1:100,000 (approx)
 FORM LINE INTERVAL 10 METRE
 SURVEY NOTE
 SURVEY CONTROL TAKEN FROM EXISTING PHOTO
 IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS
 AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL
 TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

- LEGEND**
- MAIN ROAD
 - SECONDARY ROAD
 - TRAIL
 - CUTLINE
 - RAILROAD
 - BUILDING
 - COAL LICENCE
 - RIVER
 - STREAM
 - LAKE
 - SAND
 - TREE LINE
 - FORM LINES
 - DEPRESSION FORM LINE
 - SPOT HEIGHT

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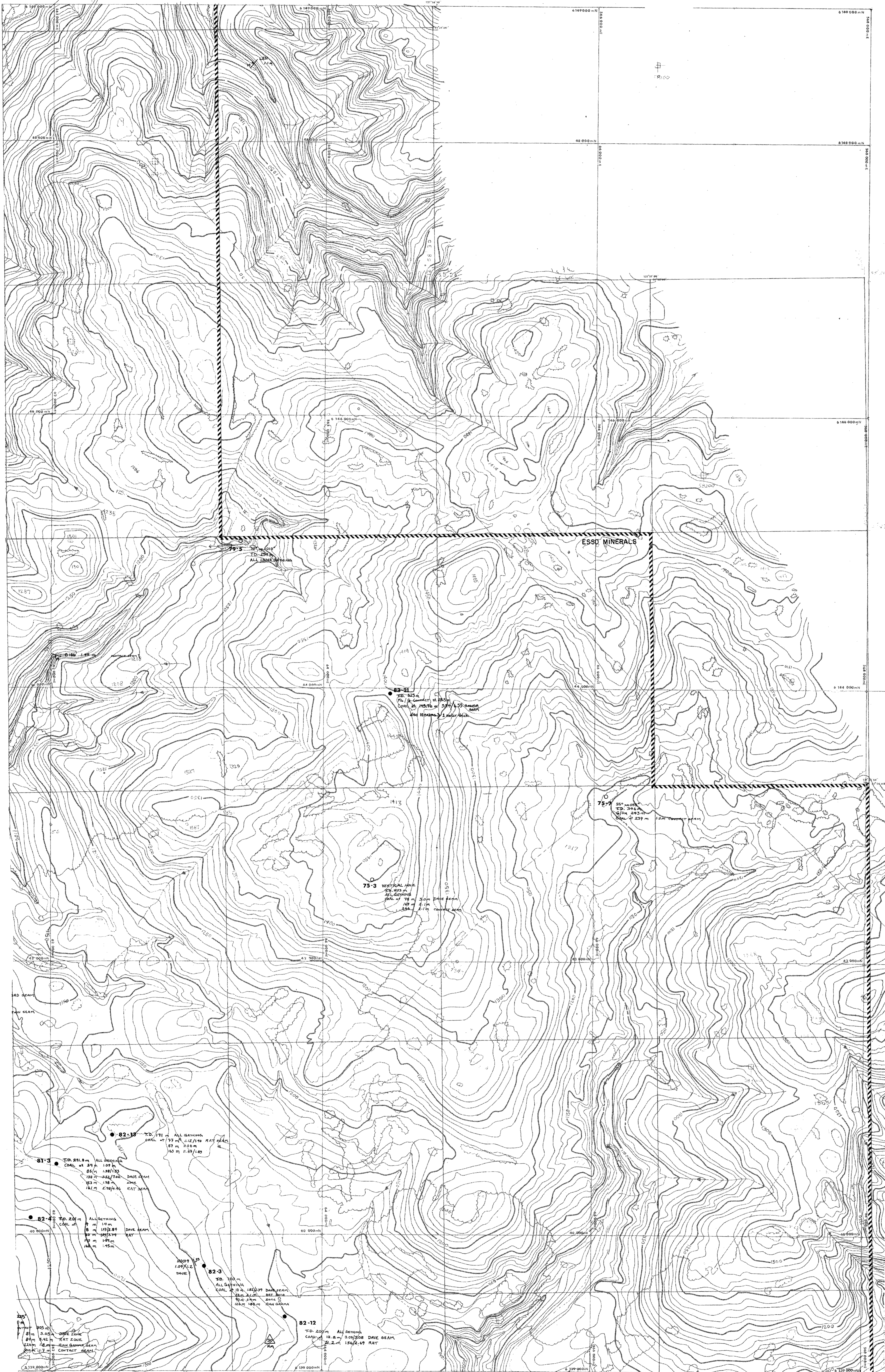
- LEGEND**
- COAL OUTCROP
 - 3377 Outcrop Number
 - Inclined Bedding and Dip
 - Coal Seam Identified
 - DRILL HOLE INFORMATION
 - ESSO RESOURCES DRILL HOLE
 - OTHER DRILL HOLE
 - T.D. TOTAL DEPTH
 - G/D/G GETTING / DRESSER CONTACT
 - 60° or 120° DIRECTION AND RADIUS OF DRILL HOLE - OTHERWISE VERTICAL
 - THICKNESS OF COAL SEAMS (METERS)
 - 4.42/5.54 NET COAL / GROSS INTERVAL
 - 1.67 GROSS INTERVAL - MARK MEASUREMENTS INCLUDED

1000 m

Fa-Falling Creek 83(20) FIG 21

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CHECKED BY:	
DATE:	COAL MAP
FILE NO.:	FALLING CREEK
DRAWING NO.:	

525



LEGEND

- OUTCROP INFORMATION**
- OUTCROP NUMBER
 - ▲ INCLINED BEDDING AND DIP
 - * TURN
 - COAL SEAM IDENTIFIED

- DRILL HOLE INFORMATION**
- ESSO RESOURCES DRILL HOLE
 - OTHER DRILL HOLE
 - TD TOTAL DEPTH
 - M/G/Dn MUD/GRAIN/GETTING/DRESSER CONTACT
 - 45°-225° INCLINATION AND AZIMUTH OF DRILL HOLE - OTHERWISE NOTED

- TRUE THICKNESS OF COAL SEAMS (METERS)**
- 0.92/354 NET COAL /GROSS INTERVAL
 - 1.0m GROSS INTERVAL - MINERALS DIVISION

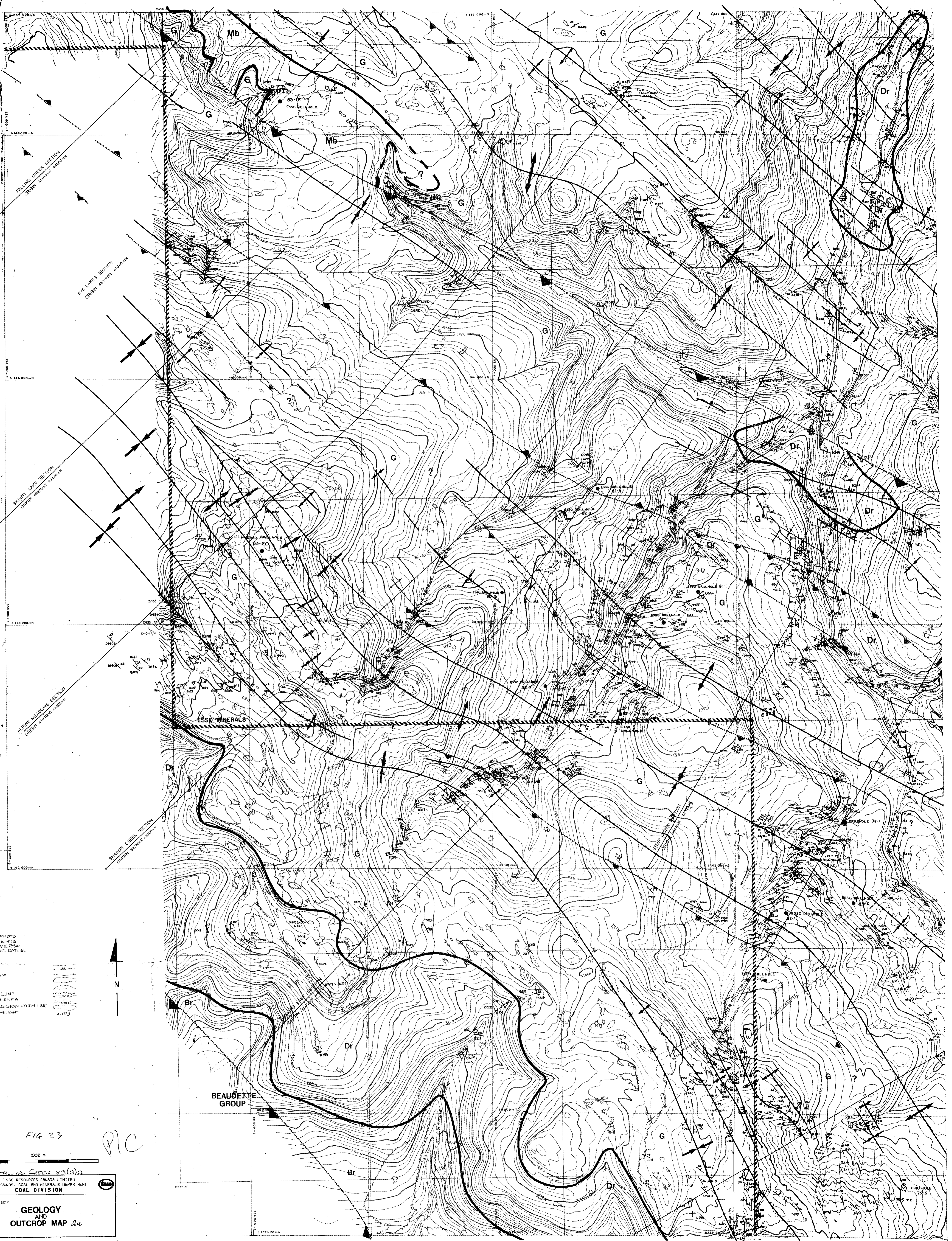
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COAL DIVISION
 DATE: **FALLING CREEK**
COAL MAP 2b
 FILE NO.: 173-0-8
 DRAWING NO.:

INDEX

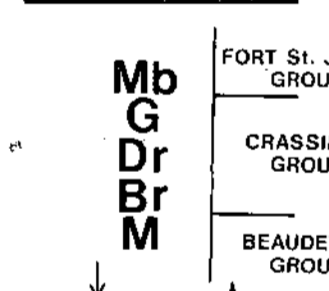
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	3a	3b	

FIG 22

SCALE 1:1000 METERS



- GEOLOGY**
- FORMATIONAL CONTACT**
- FORMATIONS -** MOOSEBAR
GETHING
DRESSER
BRENOT
MONACH
- FOLD AXES** MINOR FEATURE, SYNCLINE
MAJOR FEATURE, ANTICLINE
- FAULT** HANGING WALL
FOOTWALL
- CROSS SECTION LINE** EXPOSURE CHECK SECTION
- FEATURE OF UNCERTAIN NATURE** ?
- ATTITUDE OF BEDDING** WITH DIP AND OUTCROP NUMBER
L35
- DRILLHOLE LOCATION**



PINE PASS PROJECT

SCALE: 1:10,000 (Approx)
FORM LINE INTERVAL: 10 metres
SURVEY NOTE
SURVEY CONTROL TAKEN FROM EXISTING PHOTO
IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS
AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL
TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

- LEGEND**
- MAIN ROAD
 - SECONDARY ROAD
 - TRACK
 - TRAIL
 - CUT LINE
 - RAILROAD
 - BUILDING
 - COAL LICENCE
 - RIVER
 - STREAM
 - LAKE
 - SAND
 - TREE LINE
 - FORM LINES
 - DEPRESSION FORM LINE
 - SPOT HEIGHT

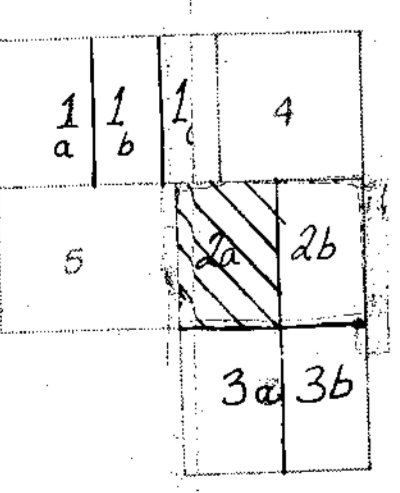


FIG 23

PIC

1000 m

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COAL DIVISION

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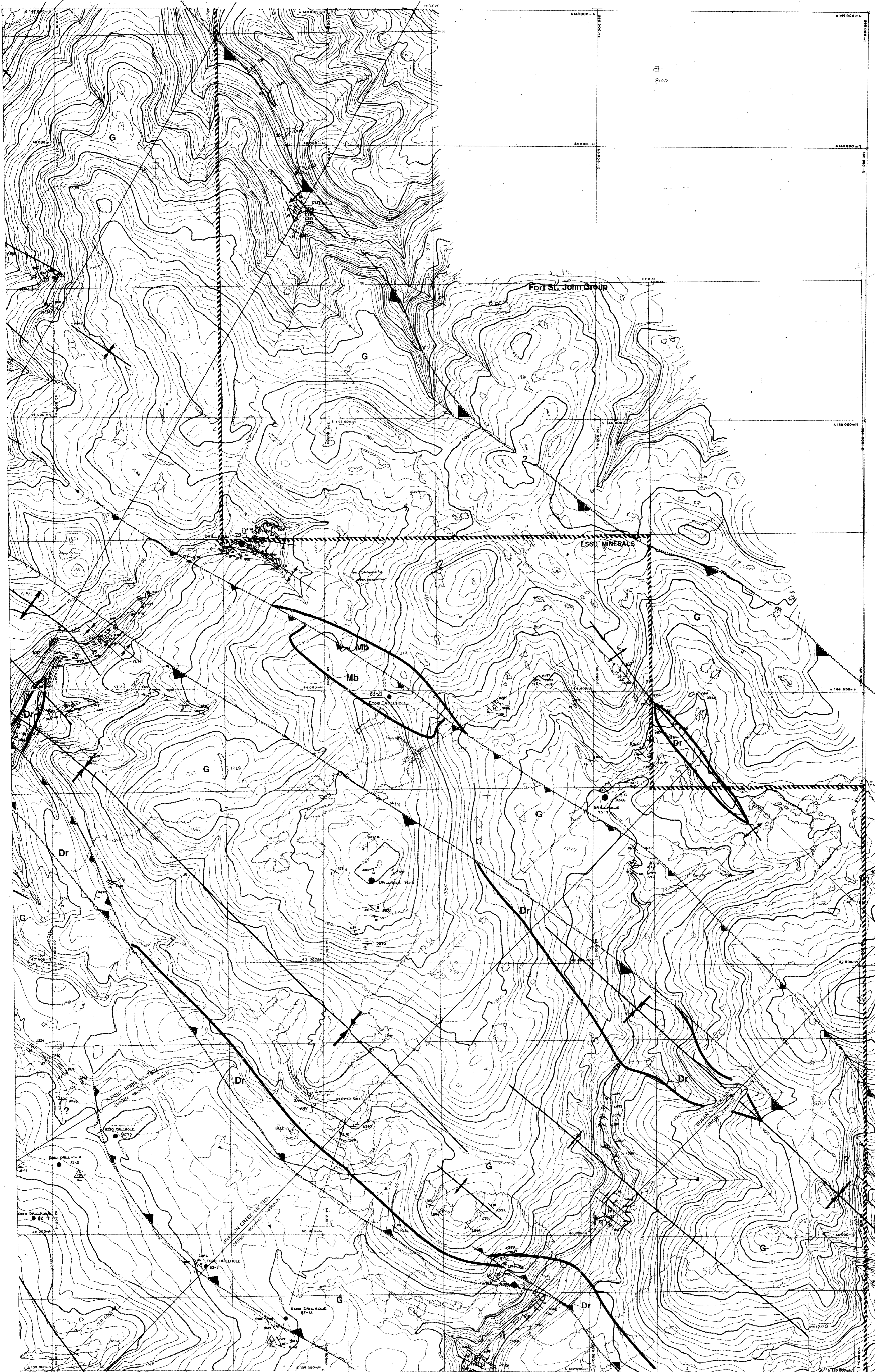
GEOLOGY AND OUTCROP MAP 2a

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525



GEOLOGY

FORMATIONAL CONTACT

FORMATIONS - MOOSEBAR
GETTING
DRESSER
BRENOT
MONACH

FOLD AXES

FAULT

CROSS SECTION LINE

FEATURE OF UNCERTAIN NATURE

ATTITUDE OF BEDDING

DRILLHOLE LOCATION

Legend symbols for Mb, G, Dr, M, and various geological features like fold axes, faults, and cross-section lines.

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 DRAWING NO.: 2b

FALLING CREEK
 GEOLOGY AND OUTCROP MAP

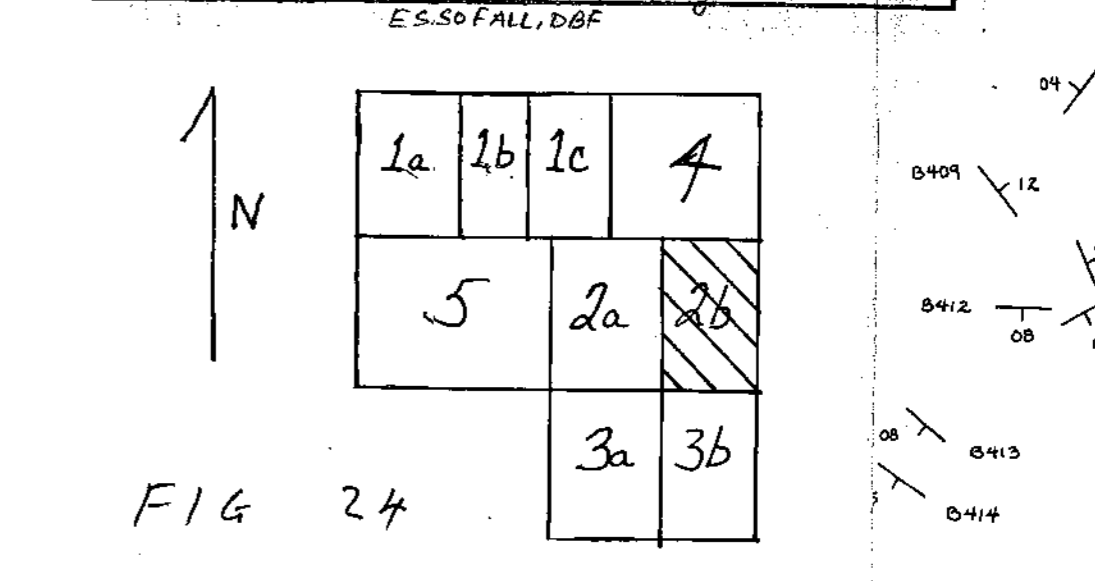
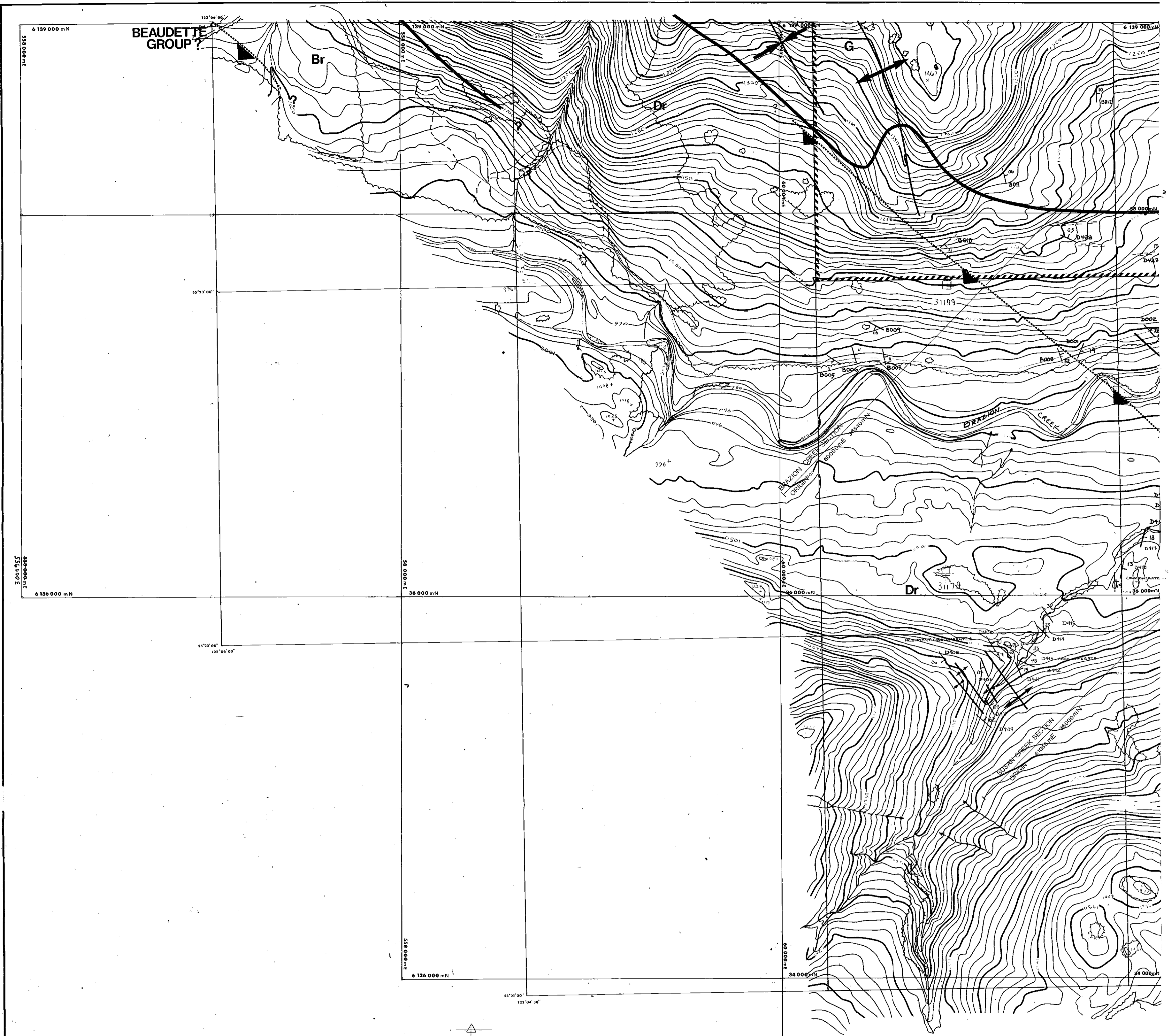


FIG 24

SCALE 1000 METERS

525



GOODRICH
1889.76

GEOLOGY

FORMATIONAL CONTACT

FORMATIONS - MOOSEBAR
GETHING
DRESSER
BRENOT
MONACH

FOLD AXES
MINOR FEATURE: SYNCLINE
MAJOR FEATURE: ANTECLINE

FAULT
HANGING WALL
FOOTWALL

CROSS SECTION LINE
EXP. CREEK SECTION

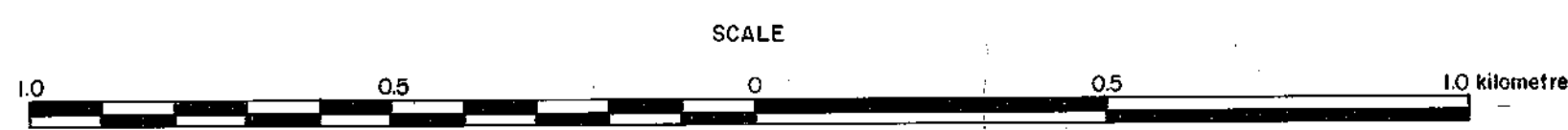
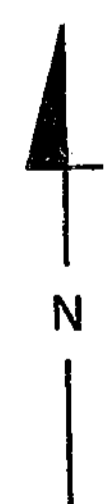
FEATURE OF UNCERTAIN NATURE ?

ATTITUDE OF BEDDING WITH DIP AND OUTCROP NUMBER
30
L-315

DRILLHOLE LOCATION

Mb
G
Dr
Br
M

FORT ST. JOHN GROUP
CRASSIER GROUP
BEAUDETTE GROUP



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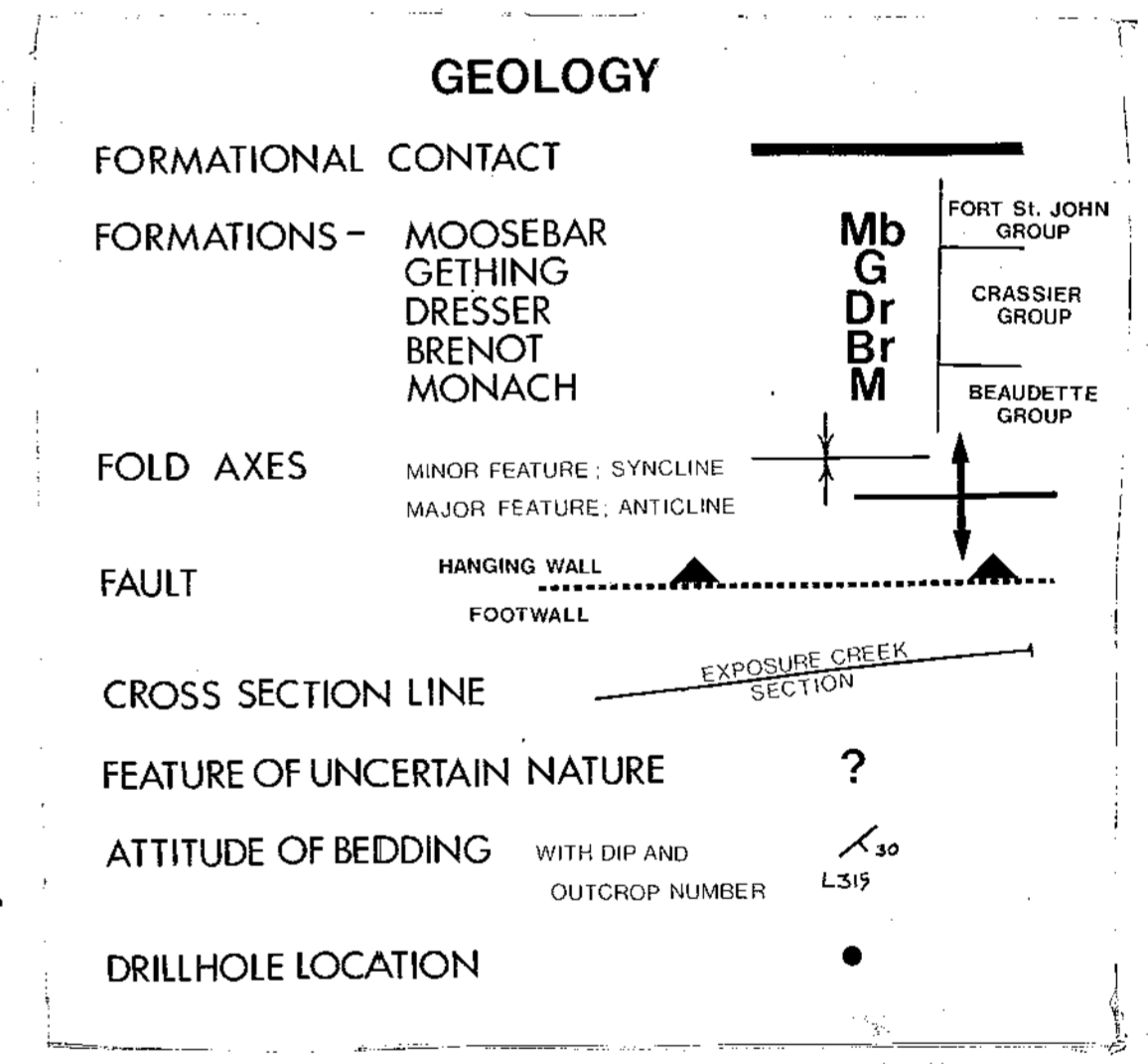
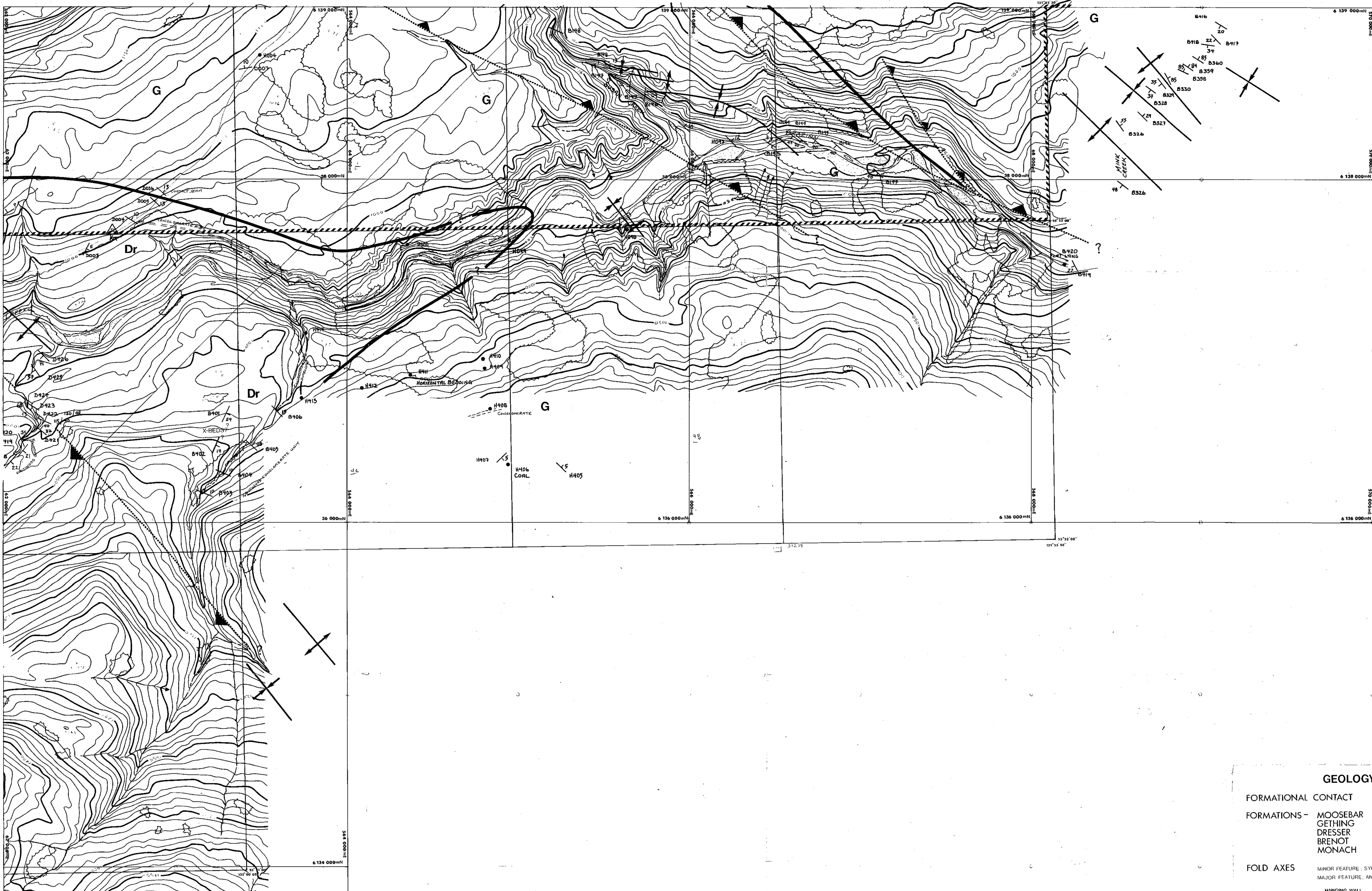
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ES&O RESOURCES CANADA LIMITED
OIL SANDS, COAL AND MINERALS DEPARTMENT
COAL DIVISION

FALLING CREEK
GEOLOGY AND OUTCROP MAP
FIG 25
MAP SHEET 3a

digitized
sources
for
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03/23/92
RC

525



ESSO MINERALS CANADA
A DIVISION OF
ESSO RESOURCES CANADA LIMITED

FORM LINE INTERVAL 10 metre
SURVEY NOTE
SURVEY CONTROL TAKEN FROM EXISTING PHOTO
IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS
AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL
TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

LEGEND

MAIN ROAD	=====	RIVER	~~~~~
SECONDARY ROAD	-----	STREAM	~~~~~
TRACK	-----	LAKE	~~~~~
TRAIL	-----	SAND	~~~~~
CUT LINE	-----	TREE LINE	~~~~~
RAILROAD	-----	FORM LINES	~~~~~
BUILDING	□	DEPRESSION FORM LINE	~~~~~
COAL LICENCE	□	SPOT HEIGHT	•

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FIG 26
FR. FALLING CREEK 882A

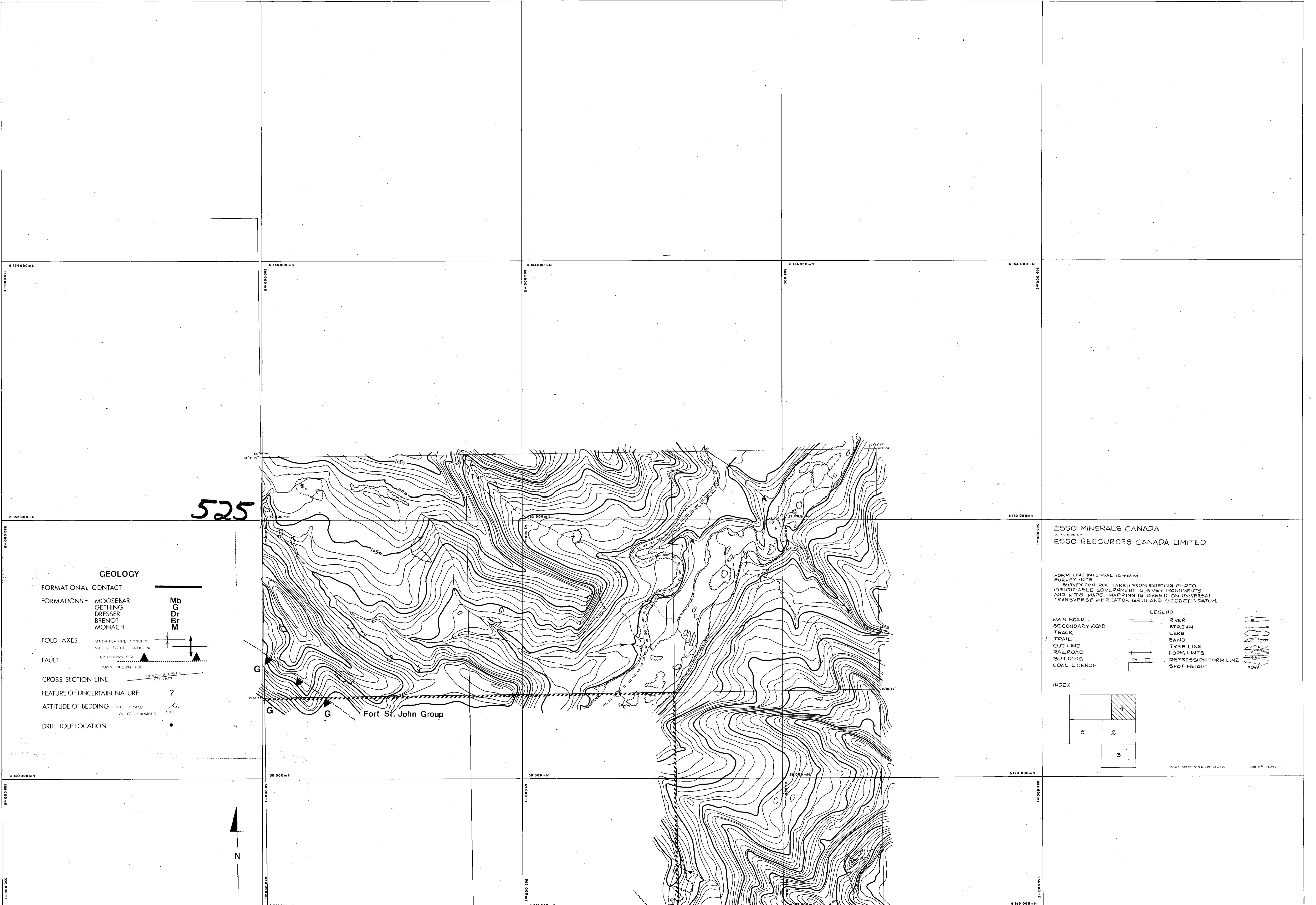
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DATE:	FALLING CREEK
FILE NO.:	OUTCROP AND GEOLOGY MAP
DRAWING NO.:	Map Sheet 3b

Drp. 14200
03/25/83
Lm. QUIMAP
ESSOFALL.DWG
JE.



525

525



GEOLOGY

FORMATIONAL CONTACT

FORMATIONS - MOOSEBAR
GETTING
DRESSER
BRENAT
MONACH

FOLD AXES

FAULT

CROSS SECTION LINE

FEATURE OF UNCERTAIN NATURE

ATTITUDE OF BEDDING

DRILLHOLE LOCATION

Mb
G
Dr
Br
M

UP THROWN SIDE
DOWN THROWN SIDE

EXTENDED SECTION

?

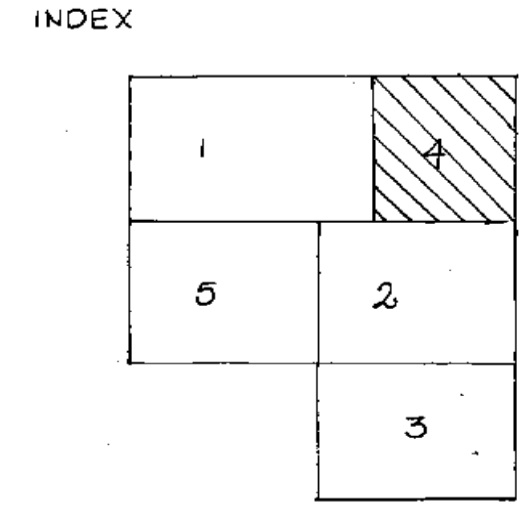
30
L319

ESSO MINERALS CANADA
A DIVISION OF
ESSO RESOURCES CANADA LIMITED

FORM LINE INTERVAL 10 metre
SURVEY NOTE
SURVEY CONTROL TAKEN FROM EXISTING PHOTO
IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS
AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL
TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.

LEGEND

MAIN ROAD	=====	RIVER	~~~~~
SECONDARY ROAD	-----	STREAM	~~~~~
TRACK	-----	LAKE	~~~~~
TRAIL	-----	SAND	~~~~~
CUT LINE	-----	TREE LINE	~~~~~
RAILROAD	-----	FORM LINES	~~~~~
BUILDING	□	DEPRESSION FORM LINE	~~~~~
COAL LICENCE	□	SPOT HEIGHT	~~~~~

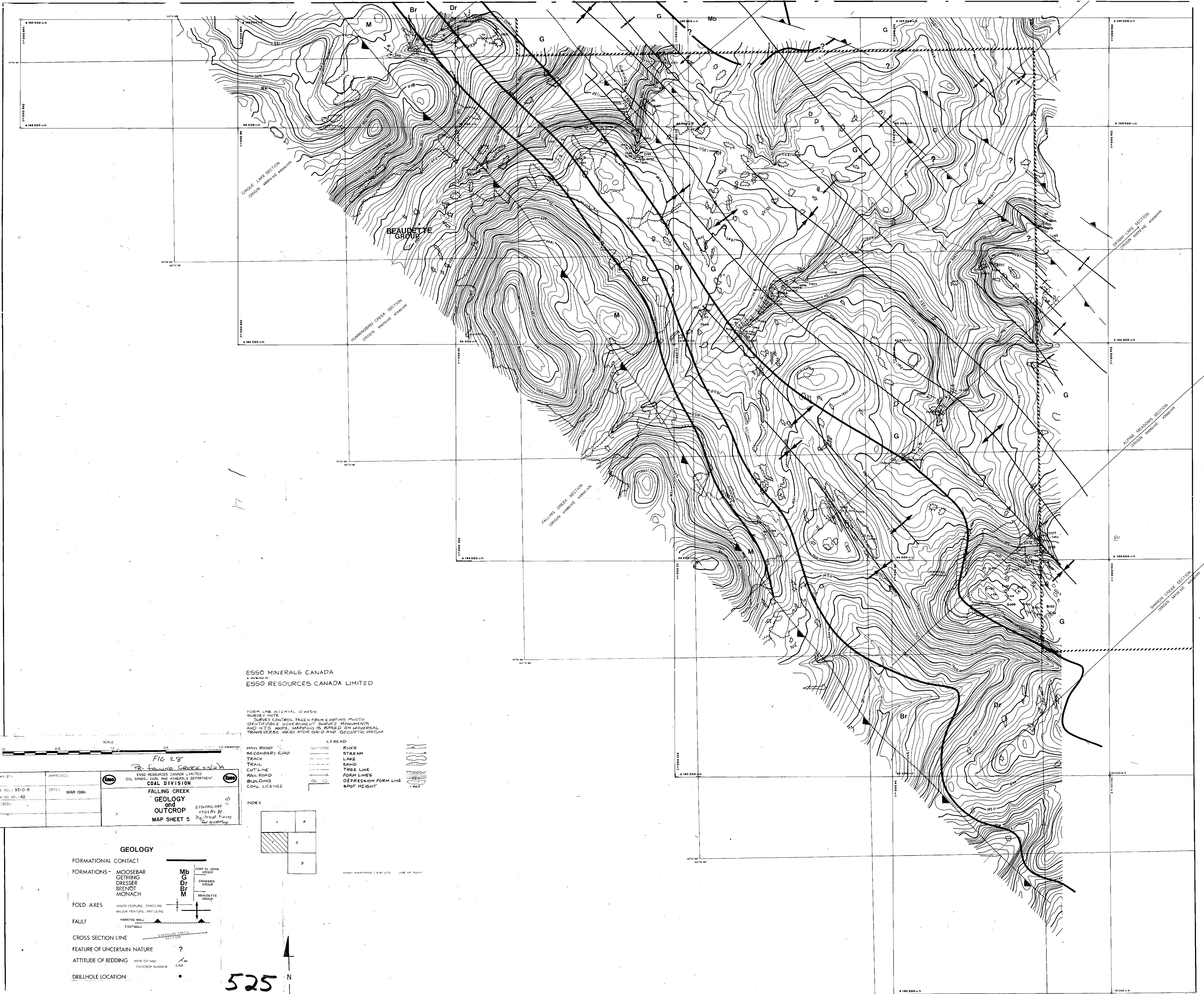


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FIG 27
P. FALLING CREEK 35(27)



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ESSO MINERALS CANADA
 ESSO RESOURCES CANADA LIMITED

FORM LINE INTERVAL 10 METRE
 SURVEY NOTE
 SURVEY CONTROL TAKEN FROM EXISTING PHOTO
 IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS
 AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL
 TRANSVERSE MERCATOR GRID AND GEODETIC DATUM

LEGEND	
MAIN ROAD	RIVER
SECONDARY ROAD	STREAM
TRACK	LAKE
TRAIL	SAND
CUTLINE	TREE LINE
RAILROAD	FORM LINES
BUILDING	DEPRESSION FORM LINE
COAL LICENCE	SPOT HEIGHT

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1	4
2	3

SCALE 1:50,000

FIG 28
 TR FALLING CREEK #10

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ESSO RESOURCES CANADA LIMITED
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COAL DIVISION

FALLING CREEK
GEOLOGY and OUTCROP
 MAP SHEET 5

ESSO-FALL-DBF
 05/05/84
 Digital Files
 for outcropping

GEOLOGY

FORMATIONAL CONTACT

FORMATIONS - MOOSEBAR
 GETTING
 DRESSER
 BRENOT
 MONACH

FOLD AXES
 MINOR FEATURE: SYNCLINE
 MAJOR FEATURE: ANTICLINE

FAULT
 HANGING WALL
 FOOTWALL

CROSS SECTION LINE

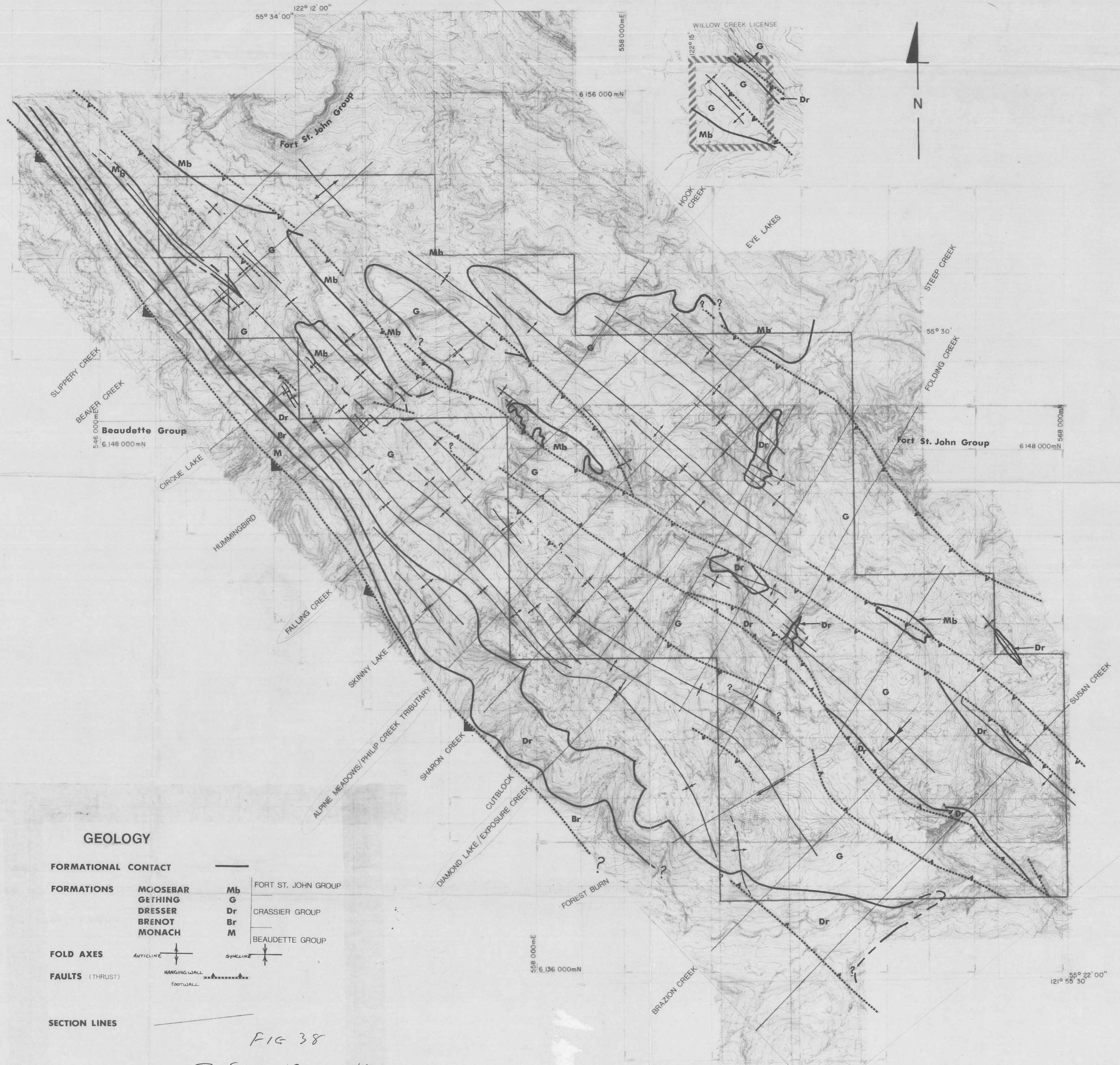
FEATURE OF UNCERTAIN NATURE

ATTITUDE OF BEDDING
 WITH DIP AND
 OUTCROP NUMBER

DRILLHOLE LOCATION

PORT ST. JOHN GROUP
 CRASSIER GROUP
 BEAUBETTE GROUP

525 N



GEOLOGY

FORMATIONAL CONTACT

FORMATIONS	MOOSEBAR	Mb	FORT ST. JOHN GROUP
	GETHING	G	
	DRESSER	Dr	CRASSIER GROUP
	BRENOT	Br	
	MONACH	M	BEAUDETTE GROUP

FOLD AXES	ANTICLINE	SYNECLINE
FAULTS (THRUST)	HANGING WALL	FOOTWALL

SECTION LINES

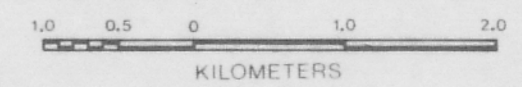
FIG 38

FR-FALLING CREEK 83/21A

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OIL SANDS, COAL AND MINERALS DEPARTMENT
COAL DIVISION

FALLING CREEK
GEOLOGY MAP
1983

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FILE NO.: 93-0-8	DATE: 02/84
DRAWING NO.: 94	SCALE: 1:50 000
REVISED:	





EMC PROPERTY BOUNDARY

525



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FILE NO.: 93-0-8	DATE: 02/84
DRAWING NO.: 94	
REVISED:	SCALE:
	1:50 000

 ESSO RESOURCES CANADA LIMITED OIL SANDS, COAL AND MINERALS DEPARTMENT COAL DIVISION 
FALLING CREEK TRAVERSE MAP 1981-83

● FLY CAMP LOCATION
 ○ ISOLATED OUTCROP
 ~~~~~ TRAVERSE PATHS

1.0 0.5 0 1.0 2.0  
 KILOMETERS

EMC PROPERTY BOUNDARY

525

55° 34' 00" 122° 12' 00"

558 000mE

WILLOW CREEK LICENSE

6 156 000 mN



548 000mE  
6 148 000mN

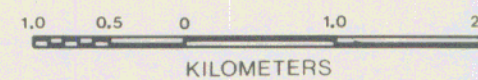
568 000mE  
6 148 000mN

55° 30'

558 000mE  
6 136 000mN

55° 22' 00"  
121° 55' 30"

- ★ 1983 ESSO DRILL HOLES
- 1982 ESSO DRILL HOLES
- PREVIOUS HOLES DRILLED BY ESSO RESOURCES
- ▼ PREVIOUS HOLES DRILLED BY PAN OCEAN LTD



EMC PROPERTY BOUNDARY  
 LICENCE BOUNDARY

PIC

|                  |                 |
|------------------|-----------------|
| DRAWN BY:        | APPROVED:       |
| FILE NO.: 93-0-8 | DATE: 02/84     |
| DRAWING NO.: 94  | SCALE: 1:50 000 |
| REVISED:         |                 |

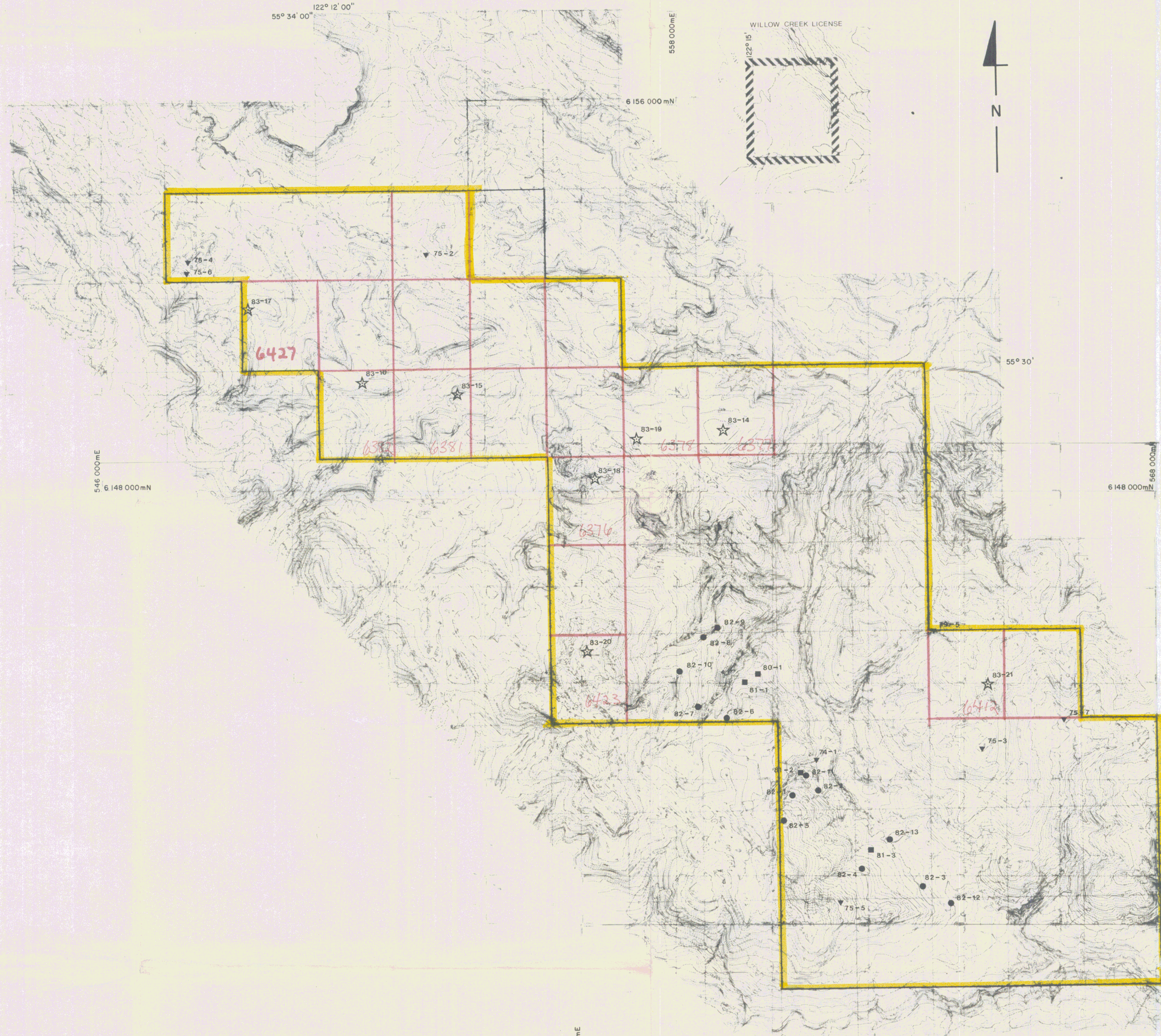
PR-FALLING CREEK 83(2A)

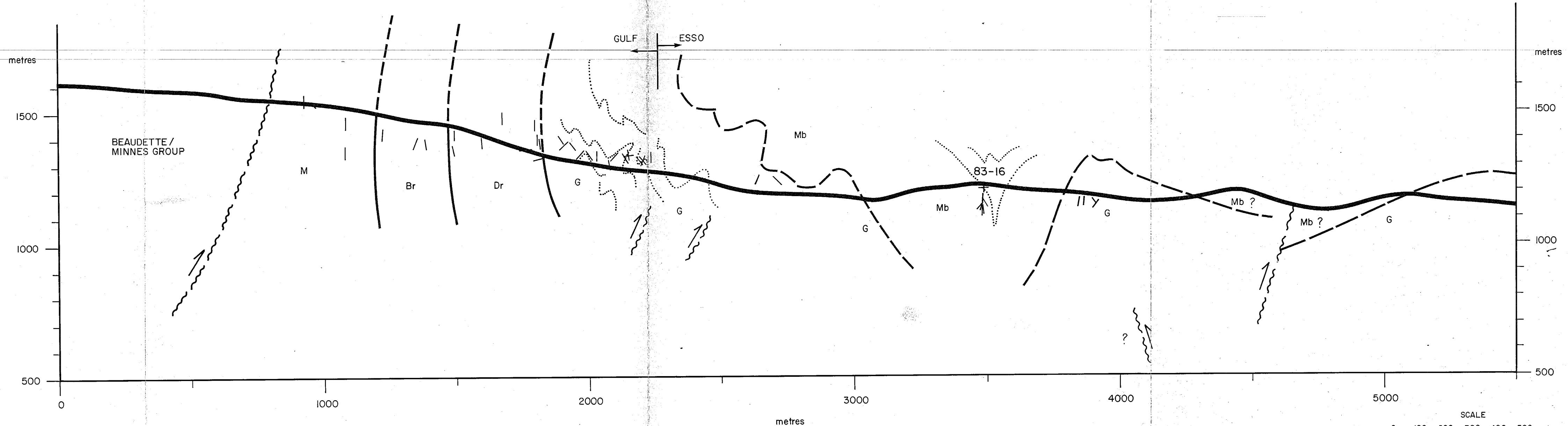
ESSO RESOURCES CANADA LIMITED  
 OIL SANDS, COAL AND MINERALS DEPARTMENT  
**COAL DIVISION**

**FALLING CREEK  
 1983 DRILL HOLE LOCATION MAP**

FIG 40

525





ORIGIN OF PROFILE HAS MAP COORDINATE 48800 mE 48000 mN  
 TREND OF SECTION 048°  
 PROFILE LOOKING IN DIRECTION 318° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

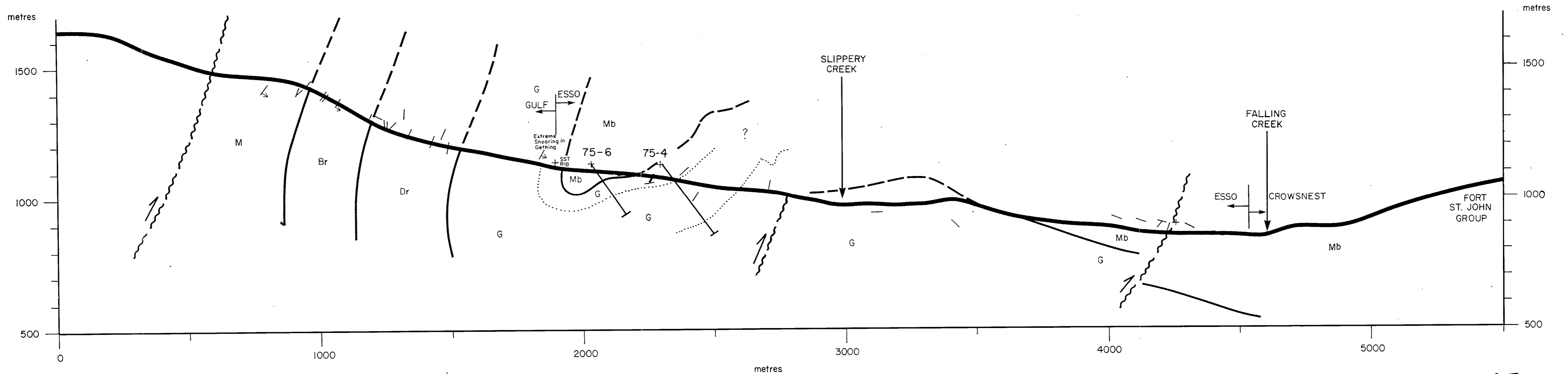
| FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |

525

*PR-FALLING CREEK 83(2)A*

|                                                                                                      |                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| DRAWN BY:<br>L.K.M./D.H.<br>CHECKED BY:<br>DATE:<br>JAN. 1984<br>FILE NO.: 93-0-8<br>DRAWING NO.: 73 | ESCO RESOURCES CANADA LIMITED<br>OIL SANDS, COAL AND MINERALS DEPARTMENT<br><b>COAL DIVISION</b><br>FALLING CREEK<br><b>CROSS SECTION</b><br>CIRQUE LAKE |
|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

Figure 41

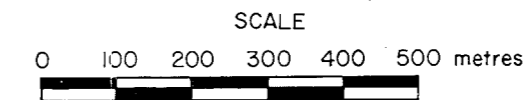


ORIGIN OF PROFILE HAS MAP COORDINATES 46650m E 51000m N  
 TREND OF SECTION 048°  
 PROFILE LOOKING IN DIRECTION 318° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

- | FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |



DRAWN BY:  
L.K.M./D.H.

CHECKED BY:

DATE:  
JAN. 1984

FILE NO.: 93-0-8  
DRAWING NO.: 75

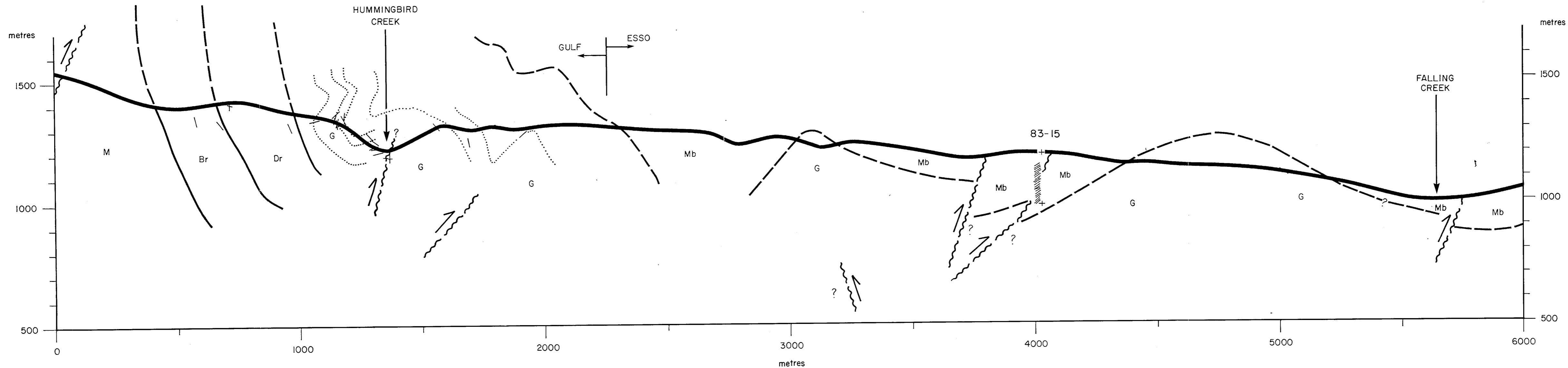
ESSO RESOURCES CANADA LIMITED  
 OIL SANDS, COAL AND MINERALS DEPARTMENT

**COAL DIVISION**

FALLING CREEK

**CROSS SECTION  
SLIPPERY CREEK**

525



ORIGIN OF PROFILE HAS MAP COORDINATES 50570mE 47240mN  
 TREND OF SECTION 050°  
 PROFILE LOOKING IN DIRECTION 320° 00°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

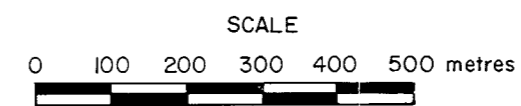
- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

FORMATIONS

- Mb MOOSEBAR
- G GETHING
- Dr DRESSER
- Br BRENOT
- M MONACH

SEAMS

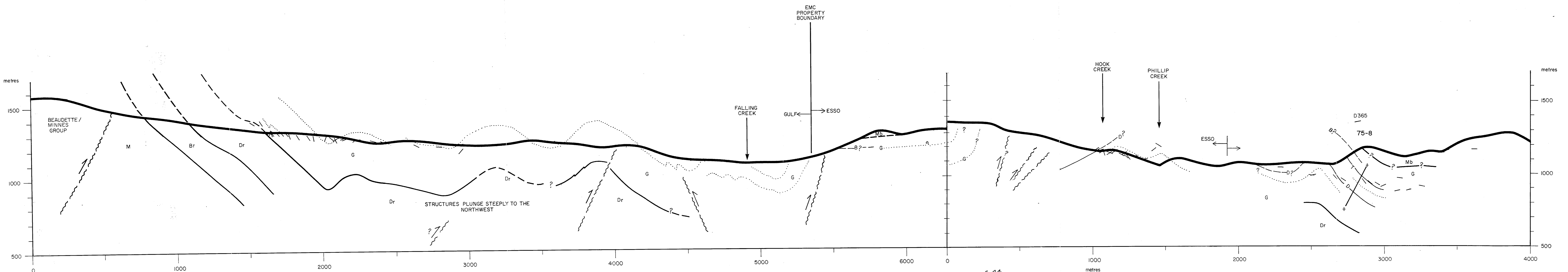
- B BRENDA
- C CONTACT (ALSO G/Dr CONTACT)
- D DAVE
- HiG HIGH GAMMA
- R RAT
- T TWIN



*PR - FALLING CREEK 83(2A)*

|                                                                                |                                                                             |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| DRAWN BY:<br>L.K.M./D.H.                                                       | ESO RESOURCES CANADA LIMITED<br>OIL SANDS, COAL AND MINERALS DEPARTMENT<br> |
| CHECKED BY:                                                                    |                                                                             |
| DATE:<br>JAN. 1984                                                             |                                                                             |
| FILE NO.: 93-0-8<br>DRAWING NO.: 74                                            |                                                                             |
| <b>FALLING CREEK<br/>         CROSS SECTION<br/>         HUMMINGBIRD CREEK</b> |                                                                             |

**525**



FALLING CREEK  
 ORIGIN OF PROFILE HAS MAP COORDINATES 51460mE 44950mN  
 TREND OF SECTION 047°  
 PROFILE LOOKING IN DIRECTION 317° 0°

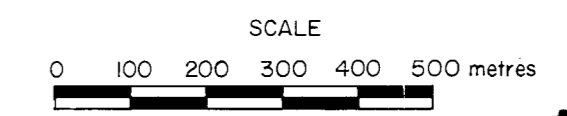
HOOK CREEK #44  
 ORIGIN OF PROFILE HAS MAP COORDINATES 56320mE 49000mN  
 TREND OF SECTION 034°  
 PROFILE LOOKING IN DIRECTION 304° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

- APPARENT DIP SYMBOL
- CUTCROP WITHOUT DIP MEASUREMENT
- DIP MEASUREMENT

- FORMATIONS
- Mb MOOSEBAR
  - G GETHING
  - Dr DRESSER
  - Br BRENOT
  - M MONACH

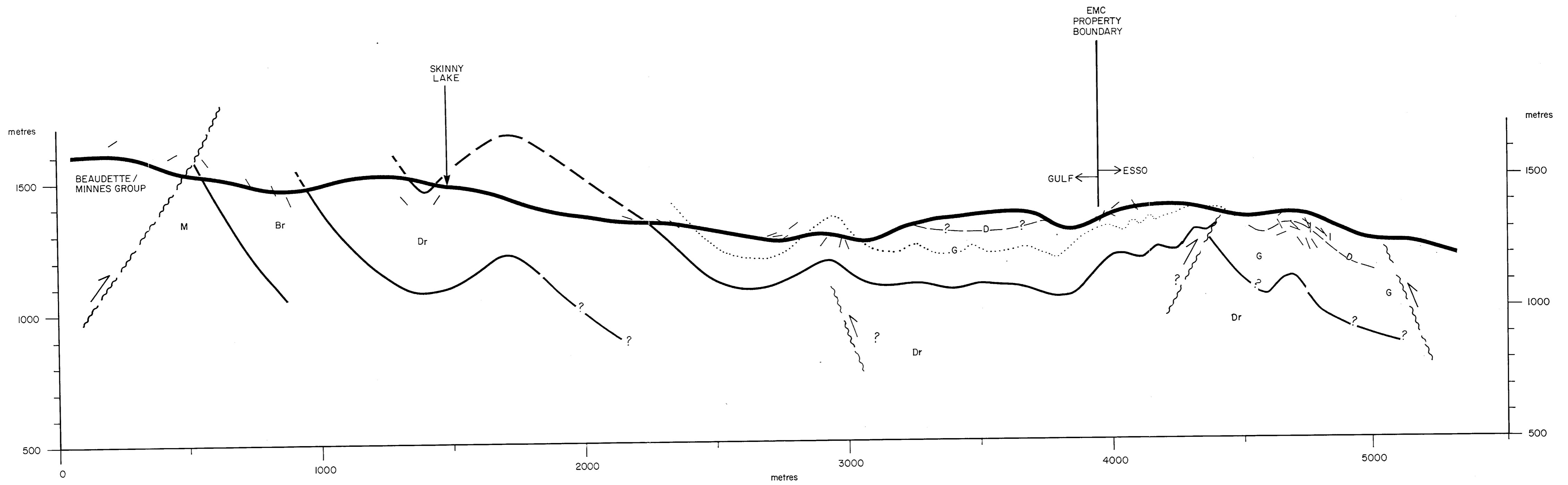
- SEAMS
- B BRENDA
  - C CONTACT (ALSO G/Dr CONTACT)
  - D DAVE
  - HIG HIGH GAMMA
  - R RAT
  - T TWIN



525

DRAWN BY:  
 L.K.M./D.H.  
 CHECKED BY:  
 DATE:  
 JAN. 1984  
 FILE NO.: 93-0-8  
 DRAWING NO.: 66

ESSO RESOURCES CANADA LIMITED  
 OIL SANDS - COAL AND MINERALS DEPARTMENT  
**COAL DIVISION**  
 FALLING CREEK  
 CROSS SECTION  
 FALLING CREEK-HOOK CREEK

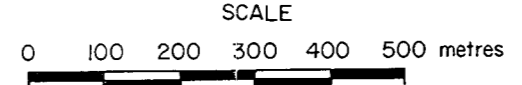


ORIGIN OF PROFILE HAS MAP COORDINATES 52470mE 43440mN  
 TREND OF SECTION 047°  
 PROFILE LOOKING IN DIRECTION 317° 00'

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

| FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |



525

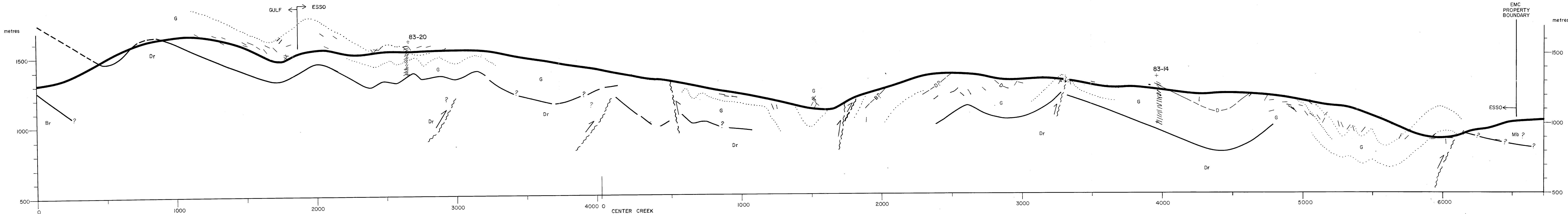
DRAWN BY: L.K.M./D.H.  
 CHECKED BY:  
 DATE: JAN. 1984  
 FILE NO.: 93-0-8  
 DRAWING NO.: 70

*PR - FALLING CREEK 83/2A*

ESSE RESOURCES CANADA LIMITED  
 OIL SANDS, COAL AND MINERALS DEPARTMENT  
**COAL DIVISION**

FALLING CREEK  
 CROSS SECTION  
 SKINNY LAKE

Figure 45



ALPINE MEADOWS  
 ORIGIN OF PROFILE HAS MAP COORDINATES 54 000mE 43 000mN  
 TREND OF SECTION 047°  
 PROFILE LOOKING IN DIRECTION 317° 0°

CENTER CREEK  
 ORIGIN OF PROFILE HAS MAP COORDINATES 56 970 mE 45 760 mN  
 TREND OF SECTION 040°  
 PROFILE LOOKING IN DIRECTION 310° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

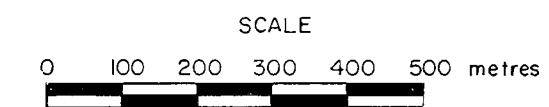
- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

FORMATIONS

- Mb MOOSEBAR
- G GETHING
- Dr DRESSER
- Br BRENOT
- M MONACH

SEAMS

- B BRENDA
- C CONTACT (ALSO G/Dr CONTACT)
- D DAVE
- Hig HIGH GAMMA
- R RAT
- T TWIN



525

DRAWN BY:  
 L.K.M./D.H.  
 CHECKED BY:  
 DATE:  
 JAN. 1984  
 FILE NO.: 93-0-8  
 DRAWING NO.: 77

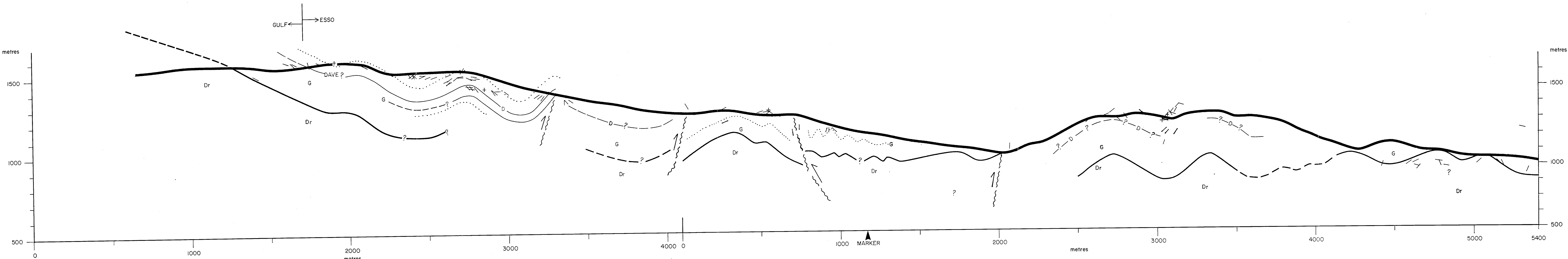
*Pr. Falling Creek 83(2)a*

ESSO RESOURCES CANADA LIMITED  
 OIL SANDS, COAL AND MINERALS DEPARTMENT  
**COAL DIVISION**

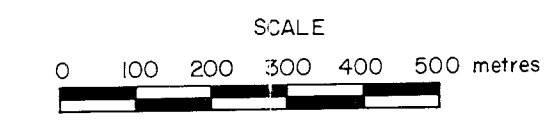
FALLING CREEK  
 CROSS SECTION  
 ALPINE MEADOWS-CENTRE CREEK

Figure 46





SHARON CREEK  
 ORIGIN OF PROFILE HAS MAP COORDINATES 54770mE 42000mN  
 TREND OF SECTION 047°  
 PROFILE LOOKING IN DIRECTION 317° 0°



SHARON CREEK  
 ORIGIN OF PROFILE HAS MAP COORDINATES 57830mE 44810mN  
 TREND OF SECTION 040°  
 PROFILE LOOKING IN DIRECTION 310° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM
- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

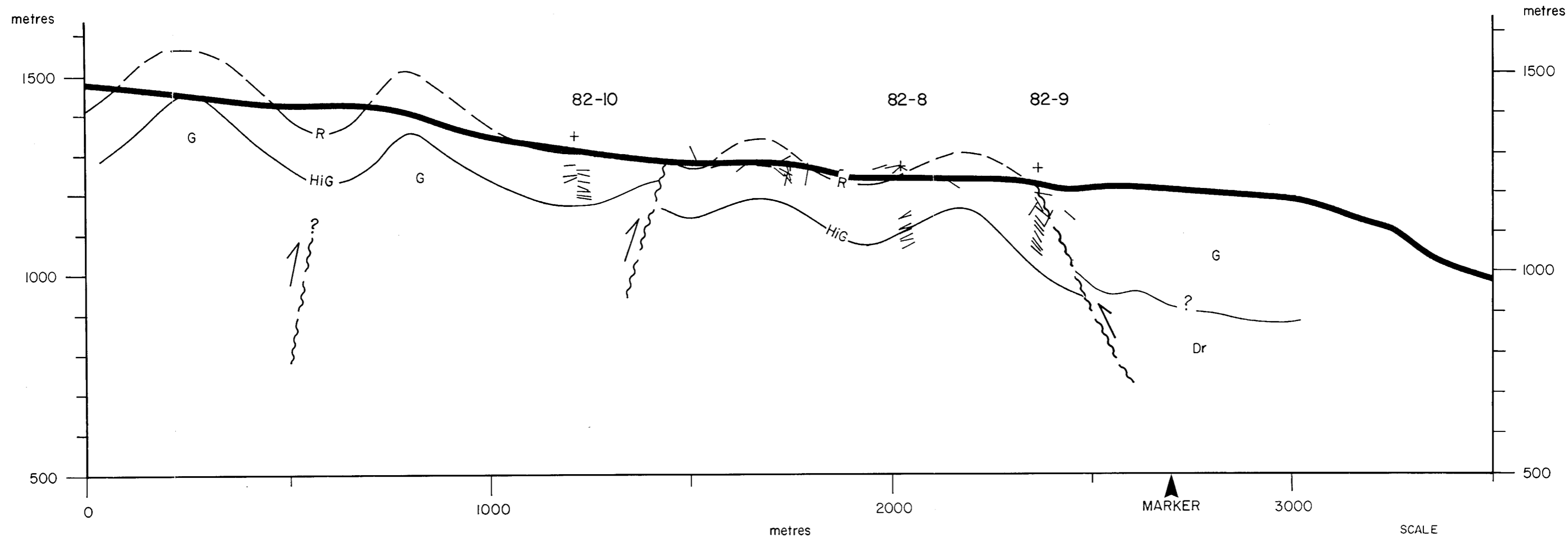
| FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |

DRAWN BY:  
 L.K.M./D.H.  
 CHECKED BY:  
 DATE:  
 JAN. 1983  
 FILE NO.: 93-0-8  
 DRAWING NO.: 76

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**COAL DIVISION**

FALLING CREEK  
 CROSS SECTION  
 SHARON CREEK

**525**

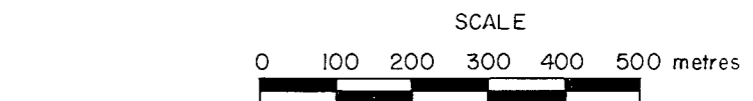


- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE

- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT
- SEAM

| FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |

ORIGIN OF PROFILE HAS MAP COORDINATES 57460mE 43200mN  
 TREND OF SECTION 037°  
 PROFILE LOOKING IN DIRECTION 307° 0°

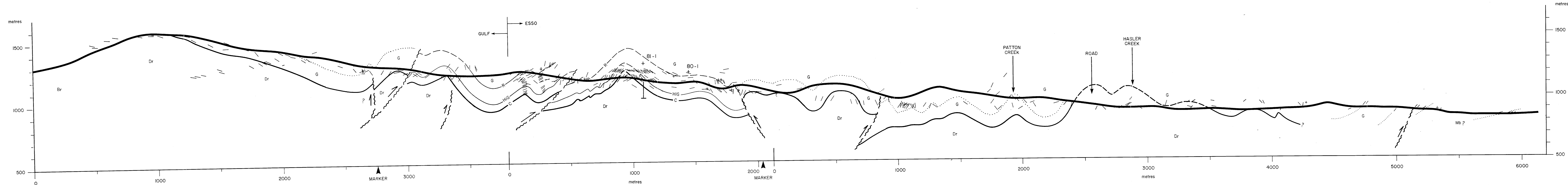


*PR - FALLING CREEK 83(2)A*

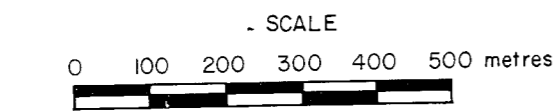
|                          |
|--------------------------|
| DRAWN BY:<br>L.K.M./D.H. |
| CHECKED BY:              |
| DATE:<br>JAN. 1984       |
| FILE NO.: 93-0-8         |
| DRAWING NO.: 69          |

ESSO RESOURCES CANADA LIMITED  
 OIL SANDS, COAL AND MINERALS DEPARTMENT  
**COAL DIVISION**  
 FALLING CREEK  
 CROSS SECTION  
 CUTBLOCK

**525**



DIAMOND LAKE (WITH EXPOSURE CREEK)  
 ORIGIN OF PROFILE HAS MAP COORDINATES 56 000mE 40 470mN  
 TREND OF SECTION 045°  
 PROFILE LOOKING IN DIRECTION 315° 0°



EXPOSURE CREEK  
 ORIGIN OF PROFILE HAS MAP COORDINATES 58 630mE 43 200mN  
 TREND OF SECTION 030°  
 PROFILE LOOKING IN DIRECTION 300° 0°

EXPOSURE PLUS  
 ORIGIN OF PROFILE HAS MAP COORDINATES 59 680mE 45 055mN  
 TREND OF SECTION 030°  
 PROFILE LOOKING IN DIRECTION 300° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM
- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

| FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HIG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |

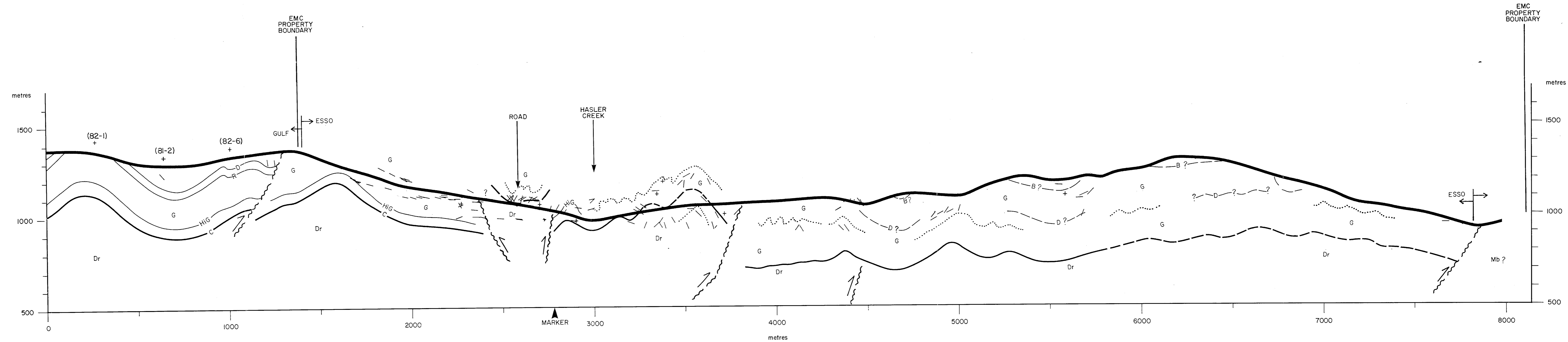
DRAWN BY:  
L.K.M./D.H.  
 CHECKED BY:  
 DATE: JAN 1984  
 FILE NO.: 93-0-8  
 DRAWING NO.: 78

ESSE RESOURCES CANADA LIMITED  
 OIL SANDS, COAL AND MINERALS DEPARTMENT  
**COAL DIVISION**

FALLING CREEK  
 CROSS SECTION  
 DIAMOND LAKE - EXPOSURE CREEK -  
 EXPOSURE PLUS

Figure 47

525



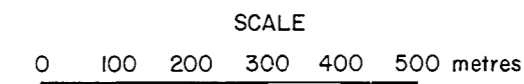
ORIGIN OF PROFILE HAS MAP COORDINATES 59 270mE 42 000mN  
 TREND OF SECTION 030°  
 PROFILE LOOKING IN DIRECTION 300° 00°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

- FORMATIONS
- Mb MOOSEBAR
  - G GETHING
  - Dr DRESSER
  - Br BRENOT
  - M MONACH

- SEAMS
- B BRENDA
  - C CONTACT (ALSO G/Dr CONTACT)
  - D DAVE
  - HiG HIGH GAMMA
  - R RAT
  - T TWIN



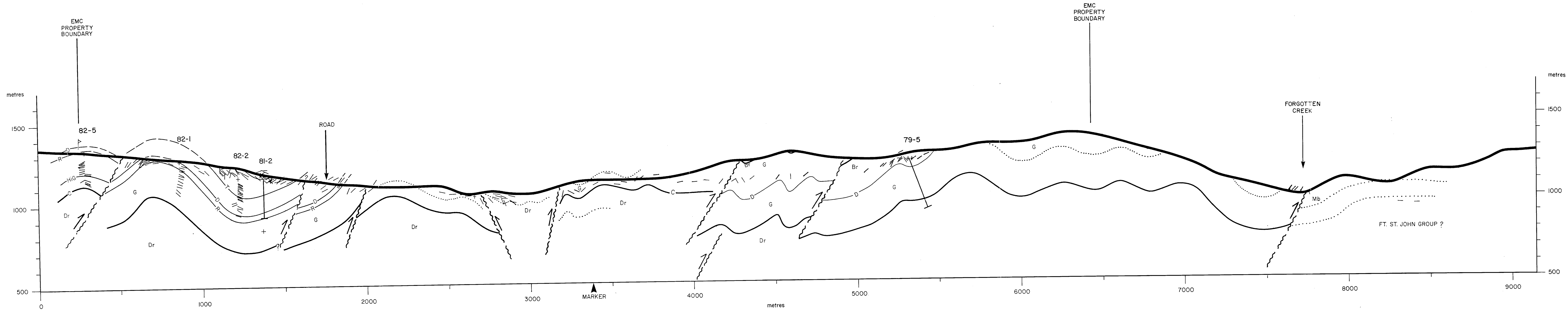
525

# 50

*PR. FALLING CREEK 83(2A)*

|                                     |                                                                                                  |
|-------------------------------------|--------------------------------------------------------------------------------------------------|
| DRAWN BY:<br>L.K.M./D.H.            | ESSO RESOURCES CANADA LIMITED<br>OIL SANDS, COAL AND MINERALS DEPARTMENT<br><b>COAL DIVISION</b> |
| CHECKED BY:                         |                                                                                                  |
| DATE:<br>JAN. 1984                  | <b>FALLING CREEK<br/>         CROSS SECTION<br/>         STEEP CREEK</b>                         |
| FILE NO.: 93-0-8<br>DRAWING NO.: 65 |                                                                                                  |

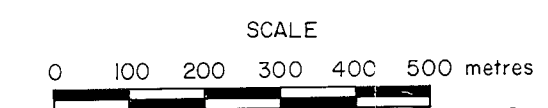
Figure 50



ORIGIN OF PROFILE HAS MAP COORDINATES 60000mE 40900mN  
 TREND OF SECTION 030°  
 PROFILE LOOKING IN DIRECTION 300° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM
- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

- | FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |

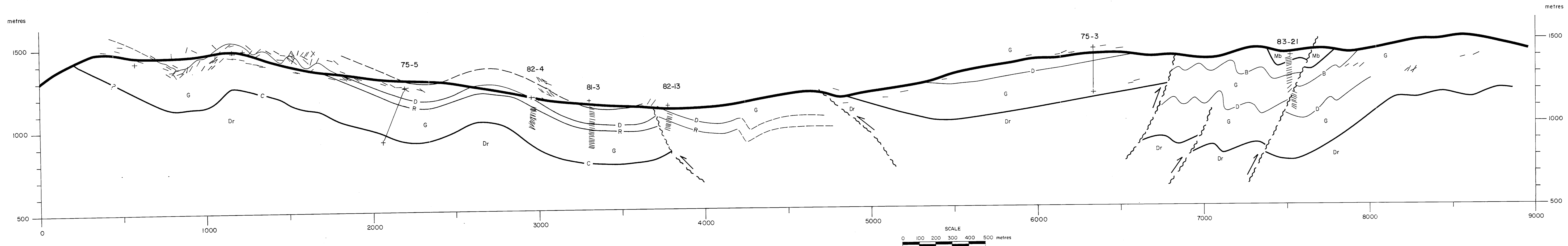


525

*Pr - Falling Creek 83/22*

|                                     |                                                                                                   |
|-------------------------------------|---------------------------------------------------------------------------------------------------|
| DRAWN BY:<br>L.K.M./D.H.            | ESSO RESOURCES CANADA LIMITED<br>OIL SANDS - COAL AND MINERALS DEPARTMENT<br><b>COAL DIVISION</b> |
| CHECKED BY:                         |                                                                                                   |
| DATE:<br>JAN. 1984                  | <b>FALLING CREEK<br/>         CROSS SECTION<br/>         FOLDING CREEK</b>                        |
| FILE NO.: 93-0-8<br>DRAWING NO.: 72 |                                                                                                   |

Figure 51



ORIGIN OF PROFILE HAS MAP COORDINATES 59130mE 39000mN  
 TREND OF SECTION 060°  
 PROFILE LOOKING IN DIRECTION 330° 6.7°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

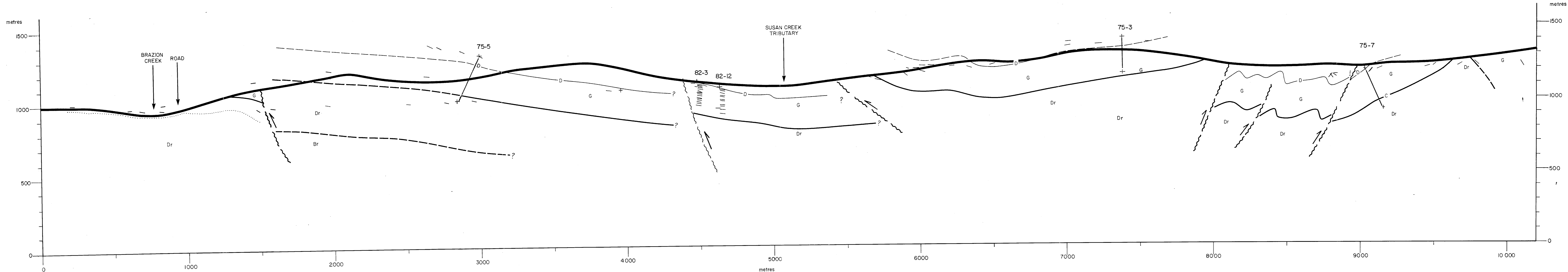
| FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HIG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |

*Re. Falling Creek 83(2)*

|                                                                                                      |                                                                                                                                                   |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| DRAWN BY:<br>L.K.M./D.H.<br>CHECKED BY:<br>DATE:<br>JAN. 1984<br>FILE NO.: 93-0-8<br>DRAWING NO.: 68 | ESSO RESOURCES CANADA LIMITED<br>OIL SANDS, COAL AND MINERALS DEPARTMENT<br><b>COAL DIVISION</b><br>FALLING CREEK<br>CROSS SECTION<br>FOREST BURN |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|

525

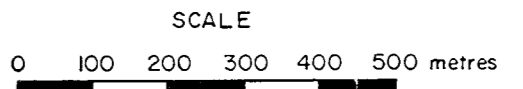
Figure 52



ORIGIN OF PROFILE HAS MAP COORDINATES 60 000mE 36 540mN  
 TREND OF SECTION 045°  
 PROFILE LOOKING IN DIRECTION 315° 0°

- FAULT WITH DIRECTION OF THRUST
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM
- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

- | FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |



525

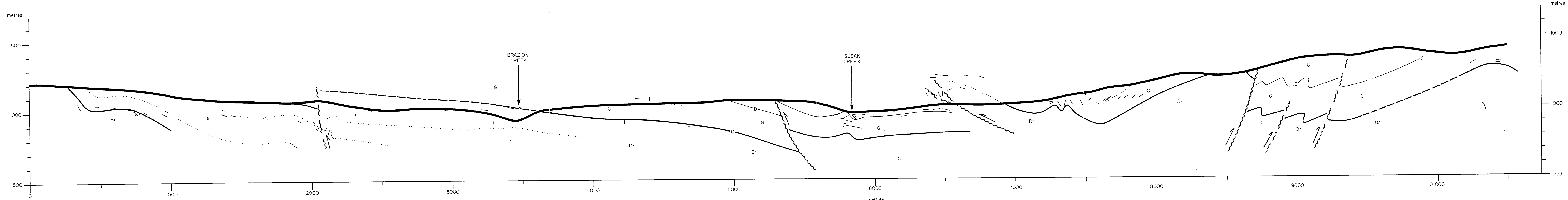
DRAWN BY:  
L.K.M./D.H.  
CHECKED BY:  
DATE:  
JAN. 1984  
FILE NO.: 93-0-8  
DRAWING NO.: 67

*Pe. Falling Creek 83(2)A*

ESSO RESOURCES CANADA LIMITED  
 OIL SANDS, COAL AND MINERALS DEPARTMENT  
**COAL DIVISION**

FALLING CREEK  
 CROSS SECTION  
 BRAZION CREEK

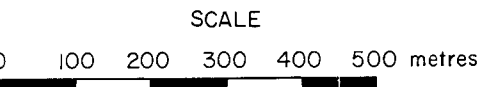
Figure 53



ORIGIN OF PROFILE HAS MAP COORDINATES 61055 mE 34950 mN  
 TREND OF SECTION 045°  
 PROFILE LOOKING IN DIRECTION 315° 00'

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM
- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

| FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |

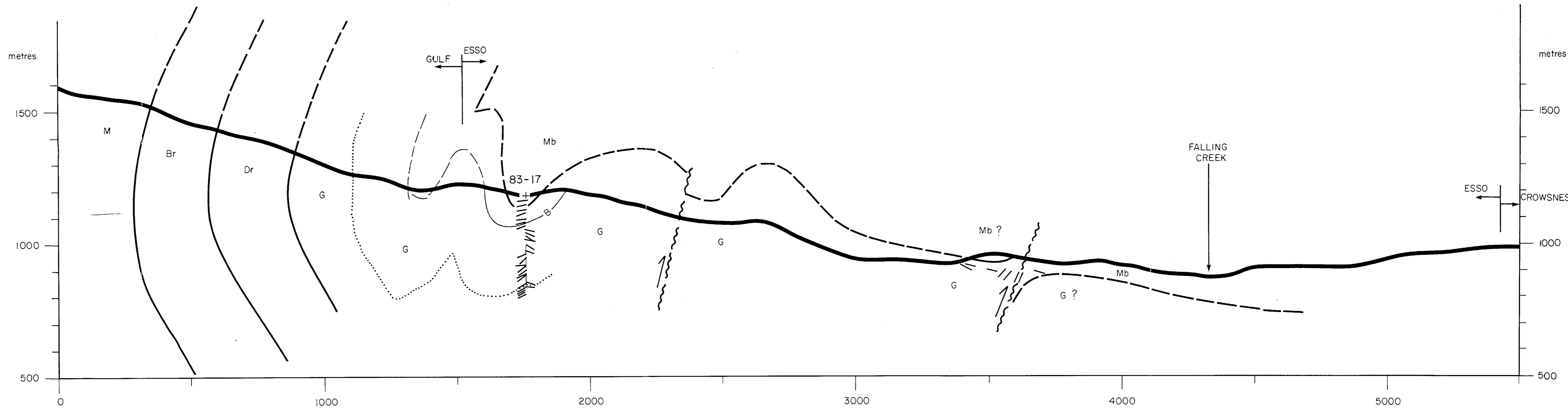


525

*R. FALLING CREEK 8362A*

|                                     |                                                                                                                             |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| DRAWN BY:<br>L.K.M./D.H.            | <br><small>ESSO RESOURCES CANADA LIMITED<br/>       OIL SANDS, COAL AND MINERALS DEPARTMENT</small><br><b>COAL DIVISION</b> |
| CHECKED BY:                         |                                                                                                                             |
| DATE:<br>JAN. 1984                  | <b>FALLING CREEK</b><br><b>CROSS SECTION</b><br><b>SUSAN CREEK</b>                                                          |
| FILE NO.: 93-0-8<br>DRAWING NO.: 71 |                                                                                                                             |





ORIGIN OF PROFILE HAS MAP COORDINATE 47815 mE 50610mN  
 TREND OF SECTION 049°  
 PROFILE LOOKING IN DIRECTION 319° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

- FORMATIONS
- Mb MOOSEBAR
  - G GETHING
  - Dr DRESSER
  - Br BRENOT
  - M MONACH

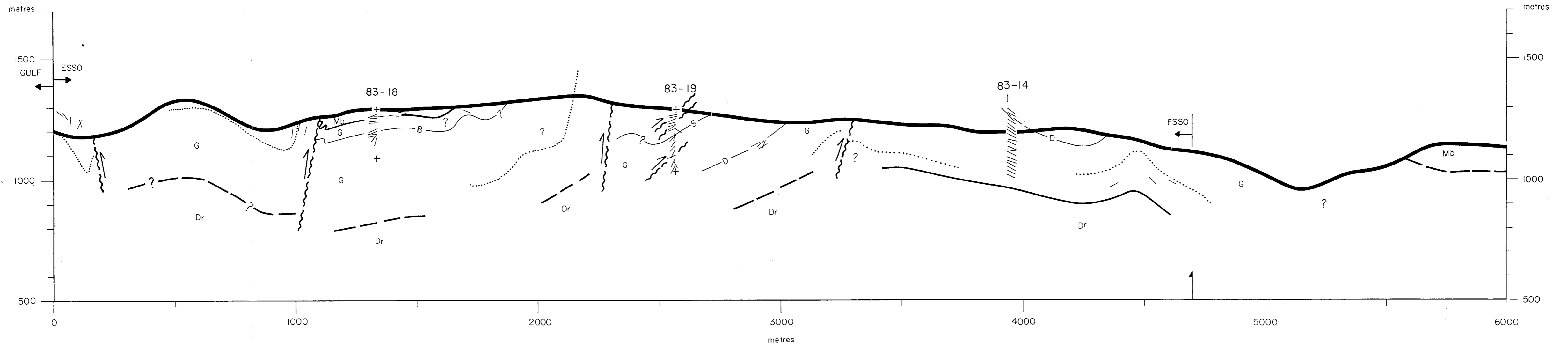
- SEAMS
- B BRENDA
  - C CONTACT (ALSO G/Dr CONTACT)
  - D DAVE
  - HiG HIGH GAMMA
  - R RAT
  - T TWIN

525

DRAWN BY: L.K.M./D.H.  
 CHECKED BY:  
 DATE: JAN. 1984  
 FILE NO.: 93-0-8  
 DRAWING NO.: 92

SCALE  
 0 100 200 300 400 500 metres

Pre-Falling Creek 83(2)h  
 ESSO RESOURCES CANADA LIMITED  
 OIL SANDS, COAL AND MINERALS DEPARTMENT  
**COAL DIVISION**  
 FALLING CREEK  
 CROSS SECTION  
 BEAVER CREEK

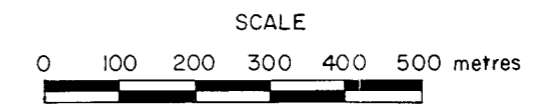


ORIGIN OF PROFILE HAS MAP COORDINATES 55 319mE 47 340mN  
 TREND OF SECTION 045°  
 PROFILE LOOKING IN DIRECTION 315° 0°

- FAULT WITH DIRECTION OF THROW
- FORMATION CONTACT
- INFERRED FORMATION CONTACT
- FORM LINE
- SEAM

- APPARENT DIP SYMBOL
- OUTCROP WITHOUT DIP MEASUREMENT

| FORMATIONS |          | SEAMS |                             |
|------------|----------|-------|-----------------------------|
| Mb         | MOOSEBAR | B     | BRENDA                      |
| G          | GETHING  | C     | CONTACT (ALSO G/Dr CONTACT) |
| Dr         | DRESSER  | D     | DAVE                        |
| Br         | BRENOT   | HiG   | HIGH GAMMA                  |
| M          | MONACH   | R     | RAT                         |
|            |          | T     | TWIN                        |
|            |          | S     | SHARON                      |



*R. Fawcett Creek 83/20*

|                                     |                                                                                                  |
|-------------------------------------|--------------------------------------------------------------------------------------------------|
| DRAWN BY:<br>L.K.M./D.H.            | ESSO RESOURCES CANADA LIMITED<br>OIL SANDS, COAL AND MINERALS DEPARTMENT<br><b>COAL DIVISION</b> |
| CHECKED BY:                         |                                                                                                  |
| DATE:<br>JAN. 1984                  | FALLING CREEK<br>CROSS SECTION<br>EYE LAKES                                                      |
| FILE NO.: 93-0-8<br>DRAWING NO.: 93 |                                                                                                  |

*525*

Figure 56

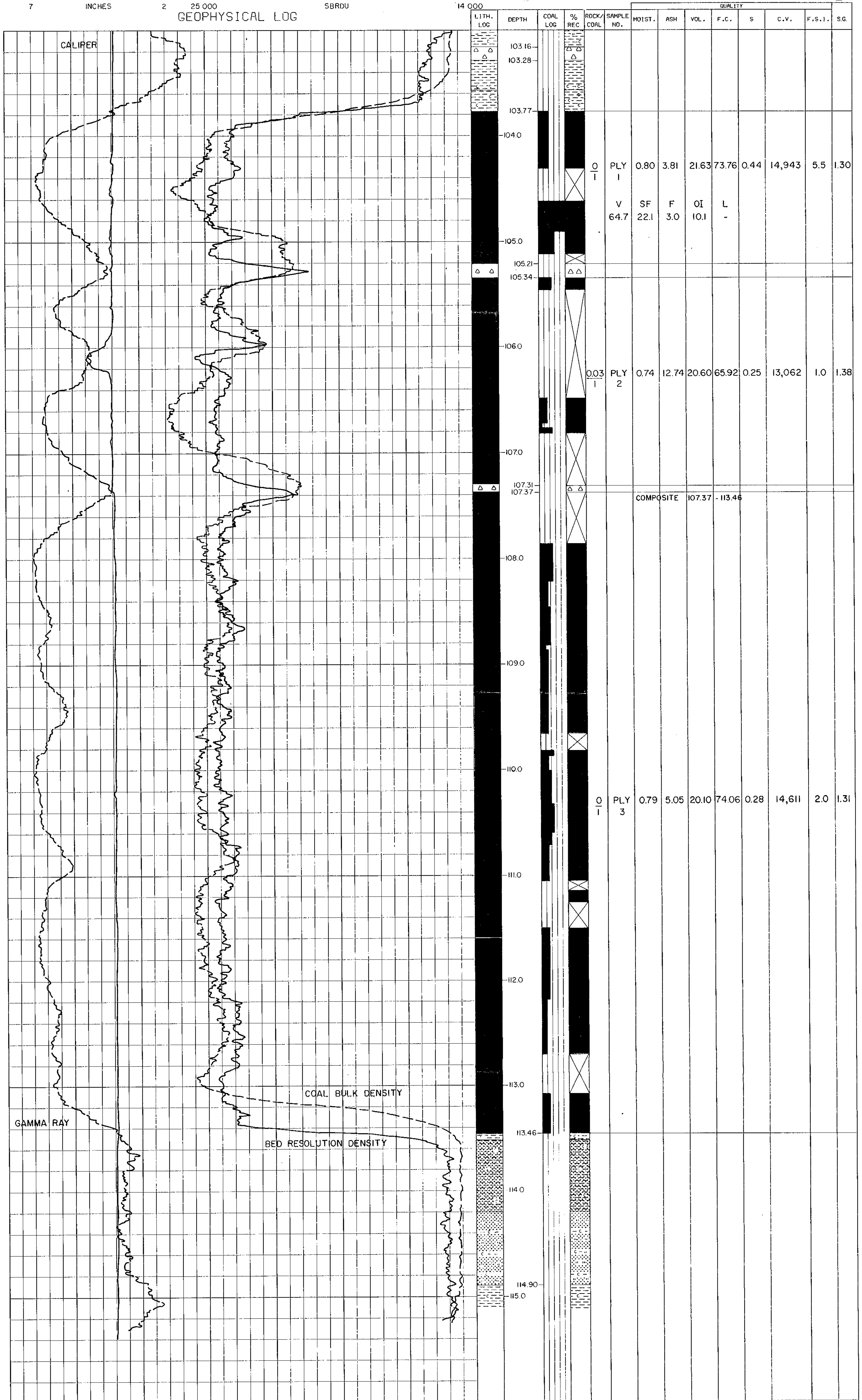


FALLING CREEK  
COAL SEAM PROFILE 83-17 SEAM 2 - ("BRENDA" SEAM)

FIG 30

525

0 7 API INCHES 150 2 6000 25 000 GEOPHYSICAL LOG sdu SBRDU 0 14 000







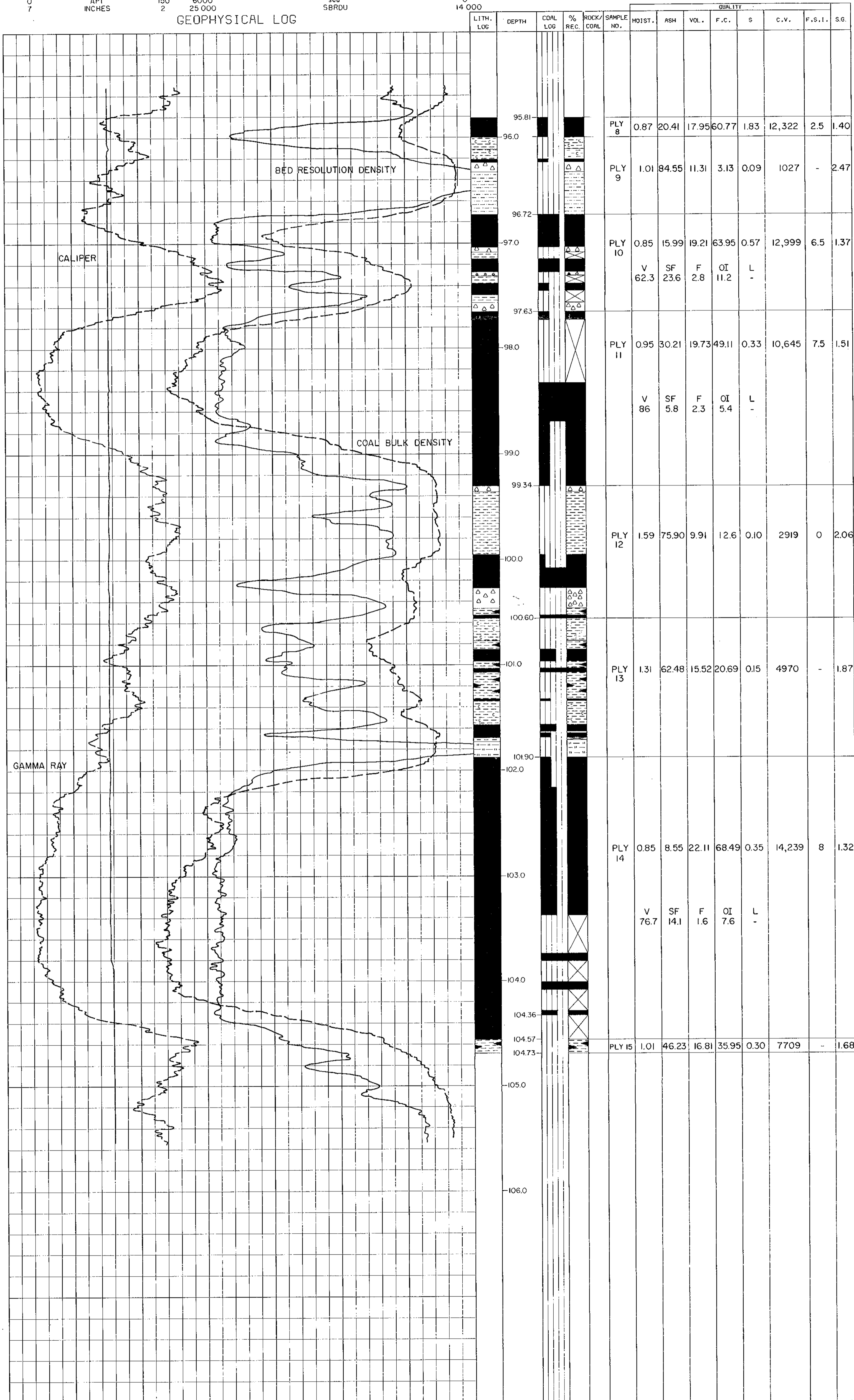
FALLING CREEK  
COAL SEAM PROFILE

83-18 SEAM 3 - ("BRENDA" SEAM)

FIG 33

525 PR-FALLING CREEK 83(3)A

0 7 API INCHES 150 2 6000 25 000 GEOPHYSICAL LOG sdu SBRDU 0 14 000

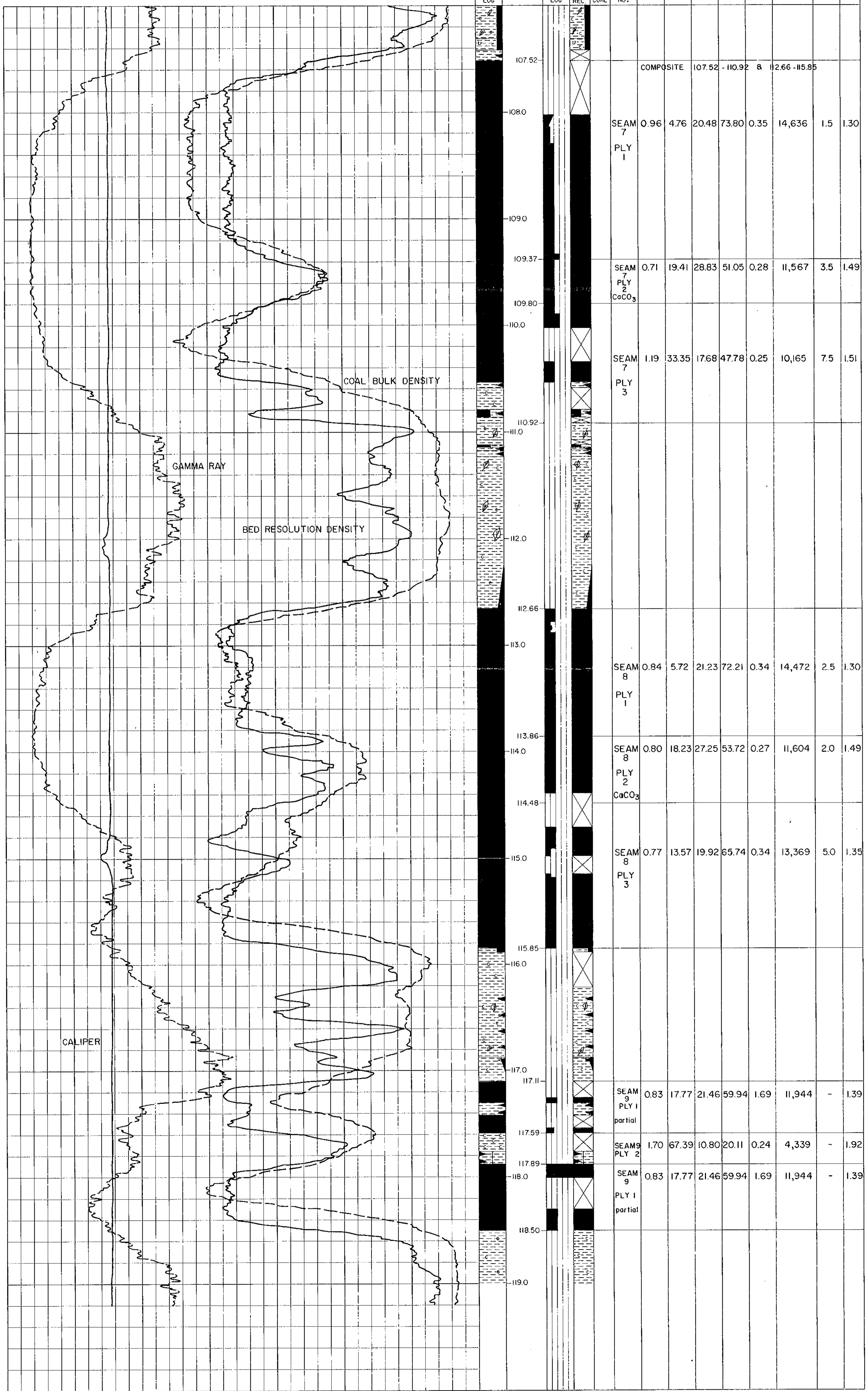


FALLING CREEK  
COAL SEAM PROFILE

83-19 SEAMS 7, 8 and 9 "Sharon Seam" FIG 34

0 7 API INCHES 150 6000 2 25000 sdu 0 14 000 SBRDU

GEOPHYSICAL LOG



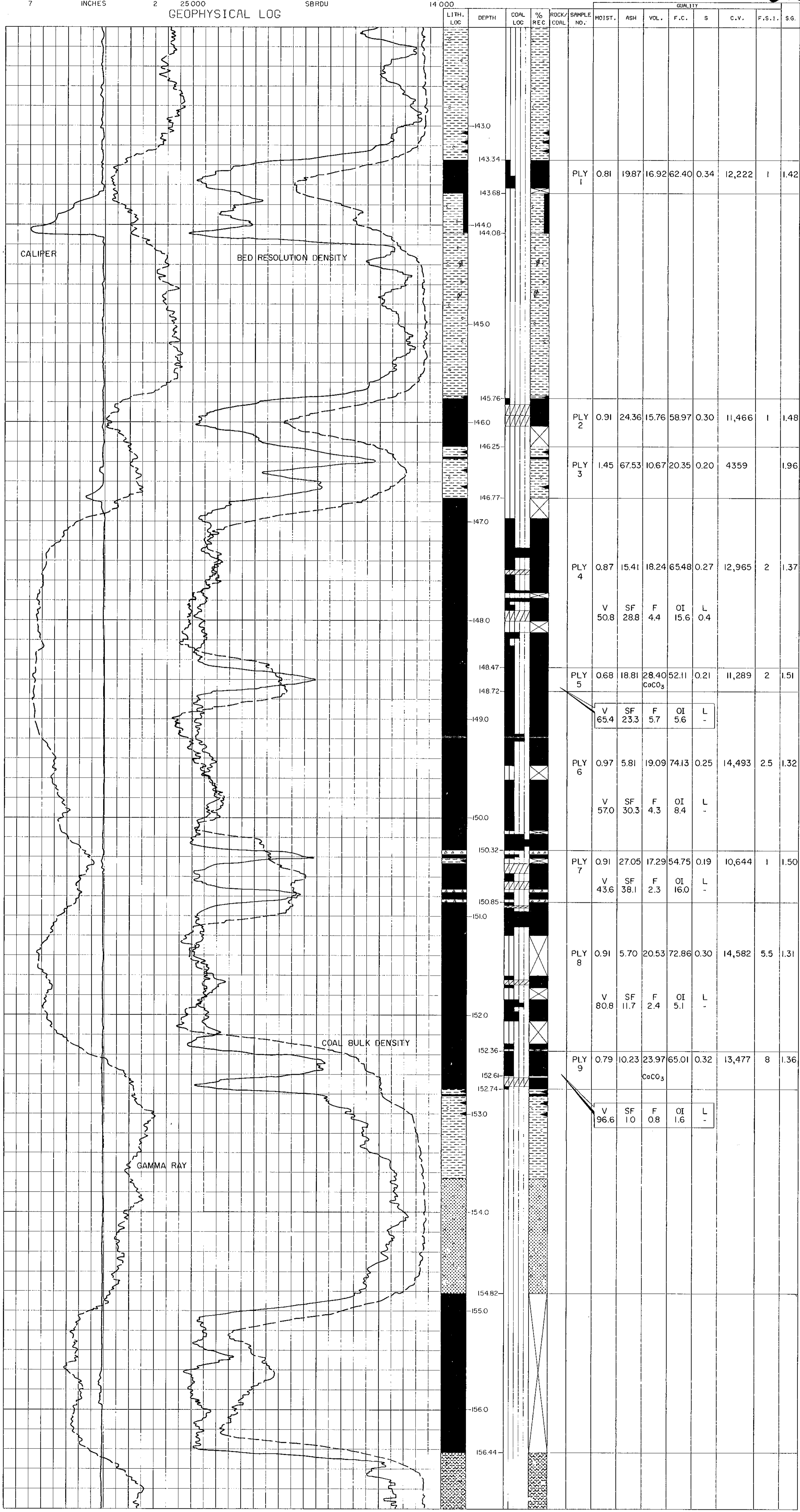




525

FALLING CREEK  
COAL SEAM PROFILE 83-21 SEAM I ("BRENDA" SEAM)

0 7 API INCHES 150 2 6000 25000 GEOPHYSICAL LOG sdu SBRDU 0 14 000



# 525

PR FALLING CREEK 83(3)A

FALLING CREEK

COAL SEAM PROFILE

83-21 SEAM 2

0  
7

API  
INCHES

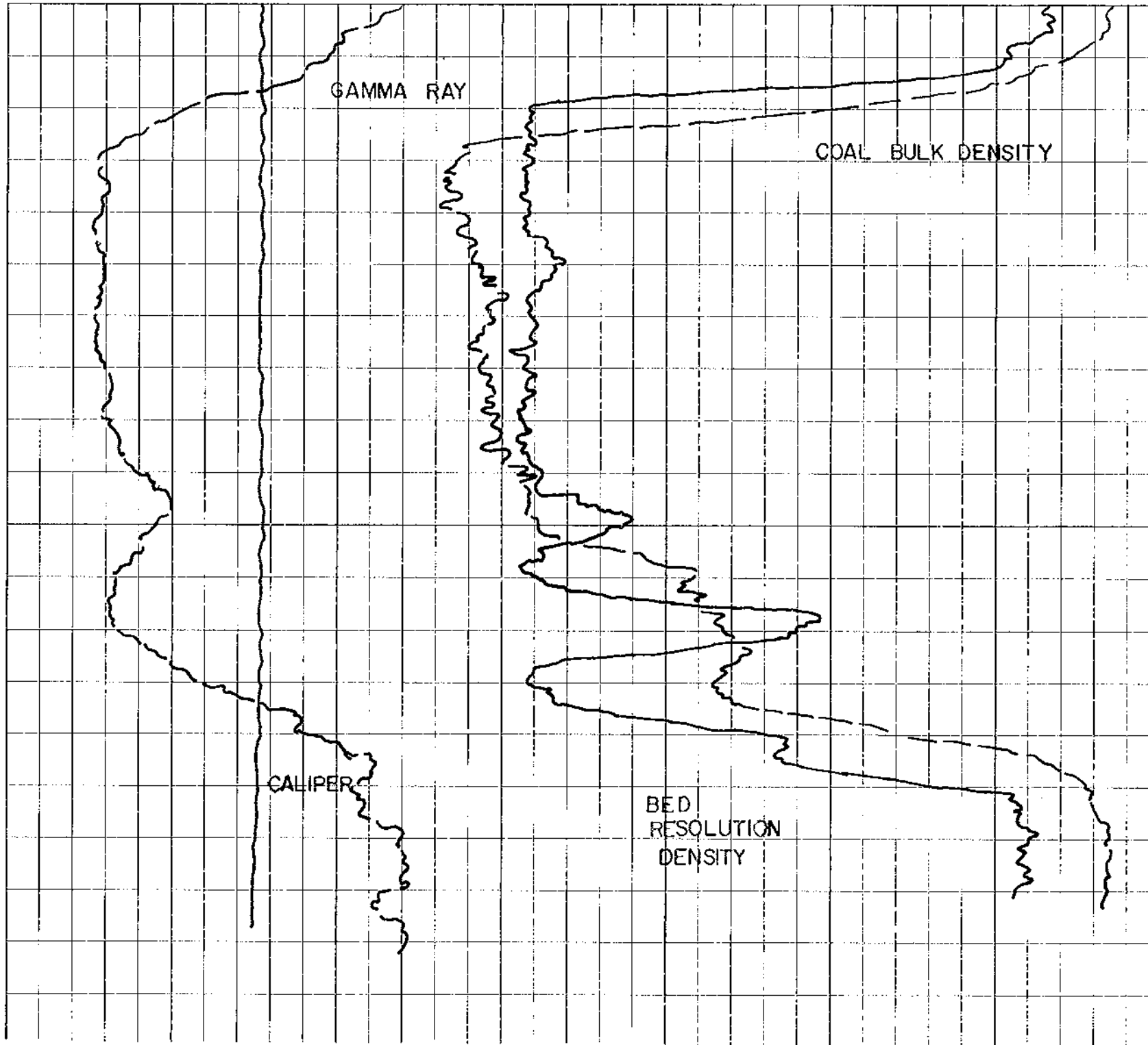
150  
2

6000  
25 000

SG  
SBRDU

0  
14 000

GEOPHYSICAL LOG



| LITH. LOG | DEPTH 60.00 | COAL LOG | % REC | ROCK/ COAL | SAMPLE NO. | QUALITY |       |       |       |      |        |        |      |  |
|-----------|-------------|----------|-------|------------|------------|---------|-------|-------|-------|------|--------|--------|------|--|
|           |             |          |       |            |            | MOIST.  | ASH   | VOL.  | F.C.  | S    | C.V.   | F.S.I. | SG.  |  |
|           | 60.32       |          |       |            |            |         |       |       |       |      |        |        |      |  |
|           | 60.64       |          |       |            |            |         |       |       |       |      |        |        |      |  |
|           | 60.94       |          |       |            | PLY 1      | 0.92    | 3.20  | 19.65 | 76.23 | 0.41 | 14,886 |        | 1.30 |  |
|           | 61.0        |          |       |            |            |         |       |       |       |      |        |        |      |  |
|           | 61.50       |          |       |            |            |         |       |       |       |      |        |        |      |  |
|           | 62.0        |          |       |            |            |         |       |       |       |      |        |        |      |  |
|           | 62.25       |          |       |            |            |         |       |       |       |      |        |        |      |  |
|           | 62.48       |          |       |            | PLY 2      | 0.77    | 25.66 | 30.94 | 42.63 | 0.22 | 9980   |        | 1.63 |  |
|           | 62.82       |          |       |            | PLY 3      | 0.92    | 11.55 | 19.57 | 67.96 | 0.33 | 13,524 |        | 1.37 |  |



525

**CONFIDENTIAL**  
**CONFIDENTIAL**  
**FILE**

**GEOLOGICAL BRANCH  
ASSESSMENT REPORT**

**00 525**

ESSO RESOURCES CANADA LIMITED - COAL DIVISION  
CORE & COAL CORE DESCRIPTION

|          |               |
|----------|---------------|
| Project  | FALLING CREEK |
| Map Area | 930, 93P      |

|       |          |
|-------|----------|
| Begin | 10/06/83 |
| End   | 17/06/83 |

|                  |           |
|------------------|-----------|
| Core Examiner(s) | B. Wright |
|                  | D. Hallas |
|                  | S. Carr   |

|          |       |
|----------|-------|
| Hole No. | 83-14 |
|----------|-------|

Page 1  
of 69

Hole Particulars

|             |              |                                  |
|-------------|--------------|----------------------------------|
| Location    | 6/ 49250 m N | 5/ 58975 m E                     |
| Elevation   | 1335 m       |                                  |
| Total Depth | 336.11 m     | Hole Bearing -<br>Hole Angle 90° |

Coal Coring Performance

|                |                                          |
|----------------|------------------------------------------|
| Core Diameter  | HQ                                       |
| Core Recovered | 328.7                                    |
| Length Cored   | 332.28                                   |
| Core Recovery  | 99%<br>excluding interval<br>62.07-69.48 |

Logging

|           |                   |
|-----------|-------------------|
| Logged By | BPB               |
|           | CCS Dipmeter      |
|           | Neutron - Neutron |
|           | Coal Quality      |
|           | Seam Thickness    |

|                  |                                 |
|------------------|---------------------------------|
| Examination Date | June 18, 1983-<br>June 27, 1983 |
|------------------|---------------------------------|

| Box No. | BCA (°) | Depth |      | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                      | Sample No. |
|---------|---------|-------|------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To   |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                      |            |
| 1       | 70°     | 3.83  | 4.44 | .61                | .57                | 4.27             | Mudstone               | silty, medium dark grey, few carbonaceous partings, calcite veining sub-parallel to bedding, 3 cm very fine grained sandstone band in center, occasional coal blebs, fractures along bedding planes (frequency = 10/m) and perpendicular to bedding (frequency = 4/m), sandy unit is cross laminated |            |
| 1       |         | 4.44  | 4.84 | 0.40               | .38                |                  | Siltstone              | medium gray, cm size concretion, iron staining on subplanar joint perpendicular to bedding                                                                                                                                                                                                           |            |
| 1       |         | 4.84  | 5.04 | 0.20               | .19                |                  | Mudstone               | dark gray, carbonaceous, coal stringers, very broken, calcite veining, iron-stained fractures                                                                                                                                                                                                        |            |
| 1       |         | 5.04  | 5.17 | 0.13               | .12                |                  | Sandstone              | medium light gray, very fine grained to fine grained, cross laminated and interlaminated with siltstone, 5 to 20 cm silty mudstone interbeds, 20 cm subplanar joint perpendicular to bedding and iron stained, coal stringers and calcite veinlets subparallel to bedding, occasional concretions    |            |

| Box No. | BCA (°)    | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                             | Sample No. |
|---------|------------|-------|-------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                             |            |
| 1       | 70°        | 5.17  | 6.32  | 1.15               | 1.08               | 6.1              | Sandstone              | as above, sharp undulating basal contact                                                                                                                                                                                                                                                                                    | VIT 1      |
| 2       | 72°<br>62° | 6.32  | 7.66  | 1.34               | 1.23               |                  | Sandstone/<br>Mudstone | two fining upward sequences, medium grey sandstone, fine grained, cross-laminated, calcite veinlets subparallel to bedding, cm sized concretions, iron-staining on fractures perpendicular to bedding, mudstones are medium dark grey, slightly carbonaceous, occasional coal stringers, 2 joints/meter, few coal stringers |            |
| 2       | 65°        | 7.66  | 8.63  | .97                | .88                | 7.6              | Sandstone/<br>Mudstone | as above, mudstone is more carbonaceous, two fining-upward sequences, lower contact not present                                                                                                                                                                                                                             |            |
| 2-3     |            | 8.63  | 9.33  | .70                | .63                | 9.8              | Mudstone               | dark grey, carbonaceous, numerous coaly stringers in places                                                                                                                                                                                                                                                                 |            |
| 3       |            | 9.33  | 9.66  | .33                | .29                |                  | Coal                   | dull lustrous with bright stringers (mm scale), gradational to mudstone above, broken core                                                                                                                                                                                                                                  |            |
| 3       |            | 9.66  | 10.09 | .43                | .37                |                  | Mudstone               | medium dark grey, carbonaceous and coaly stringers, calcite veinlets subparallel to bedding near base                                                                                                                                                                                                                       |            |
| 3       | 55°        | 10.09 | 10.35 | .26                | .21                |                  | Sandstone              | medium gray, fine grained, cross laminated, occasional rootlets, sharp, unclean undulating contact with mudstone above, muddy at base, occasional coal stringers                                                                                                                                                            |            |
| 3       |            | 10.35 | 10.68 | .33                | .29                |                  | Mudstone               | dark gray, carbonaceous, coaly stringers, occasional calcite veinlets, very thin (2 cm) slightly silty interbeds                                                                                                                                                                                                            |            |
| 3-4     | 65°        | 10.68 | 11.8  | 1.12               | 1.02               | 11.3             | Mudstone               | as above, lowest 4 cm very coaly                                                                                                                                                                                                                                                                                            |            |



| Box No. | BCA (°)           | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                | Sample No. |
|---------|-------------------|-------|-------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                   | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                |            |
| 4       |                   | 11.8  | 12.05 | .25                | .24                | 12.5             | Coal                   | dull lustrous with bright stringers, broken, slightly powdery, upper and lower contacts lost                                                                                                                                   | VIT 2      |
|         |                   | 12.05 | 12.20 | .15                | .15                |                  | Core Loss              |                                                                                                                                                                                                                                |            |
| 4       | 90°               | 12.20 | 12.65 | .45                | .45                |                  | Sandstone/<br>Mudstone | gradational cycle from fine grain medium gray sandstone to dark gray mudstone at top, carbonaceous and coaly towards top, sharp basal contact with mudstone below                                                              |            |
| 4       |                   | 12.65 | 13.54 | .89                | .84                |                  | Sandstone              | very fine grained, slightly carbonaceous, occasional roots and coaly stringers, upper 30 cm grades into a dark grey mudstone                                                                                                   |            |
| 4/5     |                   | 13.54 | 15.53 | 1.99               | 1.87               | 14.2             | Sandstone              | as above, to fine grained, occasional irregular calcite filled fractures, mottled texture-bioturbated?, rare worm burrows                                                                                                      |            |
| 5       | 50°<br>45°        | 15.53 | 17.03 | 1.50               | 1.11               | 15.8             | Sandstone              | as above, bioturbated (burrows), roots                                                                                                                                                                                         |            |
| 5/6     | 48°<br>45°        | 17.03 | 18.39 | 1.36               | .99                | 17.3             | Sandstone              | fine to very fine grained, medium to medium dark gray, lower half is muddy and carbonaceous, mottled, roots, bottom 10 cm is coaly mudstone, occasional calcite veinlets parallel to bedding associated with polished surfaces |            |
| 6/7     | 60°<br>60°<br>55° | 18.39 | 19.95 | 1.56               | 1.33               | 18.8             | Sandstone              | as above, interlaminated fine and very fine, flame structures of sandstone in overlying siltstone interbed                                                                                                                     |            |

| Box No. | BCA (°)           | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                         | Sample No.       |
|---------|-------------------|-------|-------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|         |                   | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                         |                  |
| 7       | 50°               | 19.95 | 21.45 | 1.5                 | 1.15                | 20.3             | Sandstone/<br>Mudstone | sandstone lenses and 2-10 cm thick bands in dark grey silty mudstone, roots, convoluted bedding                                                                                                                                                                         | VIT 3<br><br>GSC |
|         |                   | 21.45 | 23.04 | 1.59                | 1.30                | 21.8             | Sandstone/<br>Mudstone | as above, sandstone is dominant, vague cross-bedding                                                                                                                                                                                                                    |                  |
| 7-8     | 60°<br>57°<br>57° | 23.04 | 24.40 | 1.36                | 1.15                | 23.4             | Mudstone/<br>Sandstone | as above, grades to carbonaceous mudstone, lower half has coaly stringers                                                                                                                                                                                               |                  |
| 8-9     |                   | 24.40 | 25.15 | .75                 | .64                 | 24.9             | Coal                   | upper contact lost, dull and dull banded, upper 30 cm. broken stick coal, lower portion broken powdered and muddy, upper contact lost, likely gradational contact with coaly mudstone below                                                                             |                  |
| 9       |                   | 25.15 | 25.2  | .05                 | .04                 |                  | Coal Loss              |                                                                                                                                                                                                                                                                         |                  |
| 9       | 60°               | 25.2  | 25.78 | .58                 | .50                 |                  | Sandstone/<br>Mudstone | inter-crosslaminated, medium light gray sandstone and medium dark gray silty mudstone, very mottled where bedding is indistinct, rooted, soft sediment deformation and sand filled tubes, bioturbation likely, occasional calcite vein and veinlets parallel to bedding |                  |
|         |                   | 25.78 | 26.2  | .42                 | .36                 |                  | Core Loss              |                                                                                                                                                                                                                                                                         |                  |
| 9       |                   | 26.2  | 27.68 | 1.48                | 1.23                | 26.4             | Sandstone              | as above, less mudstone                                                                                                                                                                                                                                                 |                  |
| 9/10    | 57°               | 27.68 | 29.26 | 1.58                | 1.33                | 28.0             | Sandstone              | as above, nearly all sandstone                                                                                                                                                                                                                                          |                  |

| Box No. | BCA (°)    | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                 | Sample No. |
|---------|------------|-------|-------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                 |            |
| 10      | 58°<br>55° | 29.26 | 30.74 | 1.48                | 1.23                | 29.5             | Sandstone              | as above, maximum sandstone grain size upper fine grained to dark muddy siltstones                                                              |            |
| 11      | 62°        | 30.74 | 32.24 | 1.50                | 1.32                | 31.0             | Sandstone              | as above, carbonaceous plant fragments, grades to muddy siltstone in center of interval where numerous calcite veins and a shattered zone occur |            |
| 11      | 57°        | 32.24 | 33.09 | .85                 | .71                 | 32.5             | Sandstone              | fine grained, muddy siltstone laminations, soft sediment deformation, pyrite nodule near base, roots, carbonaceous in places, stick core        |            |
|         |            | 33.09 | 33.17 | .08                 | .07                 |                  | Core Loss              | (mudstone)                                                                                                                                      |            |
| 11      |            | 33.17 | 33.3  | .13                 | .11                 |                  | Mudstone               | carbonaceous, coaly stringers, calcite veinlets parallel to bedding                                                                             |            |
| 12      |            | 33.3  | 33.48 | .18                 | .15                 |                  | Coal                   | dull with .5 to 1.0 cm bright bands, polished surfaces, hard and moderately broken                                                              | VIT 4      |
| 12      |            | 33.48 | 33.73 | .25                 | .20                 | 34.0             | Coal                   | as above, sheared, highly broken and powdered                                                                                                   |            |
|         |            | 33.73 | 33.90 | .17                 | .13                 |                  | Coal Loss              |                                                                                                                                                 |            |
| 12      |            | 33.90 | 35.03 | 1.13                | .88                 |                  | Mudstone               | carbonaceous, rubbly at top and base, a few bright coal stringers, calcite veinlets subparallel to bedding, polished surfaces                   |            |
| 12      |            | 35.03 | 35.2  | .17                 | .13                 |                  | Core Loss              |                                                                                                                                                 |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified<br>(Include Coal Recovery for Each Seam)                                                                                             |            |
| 12/13   |         | 35.2  | 36.1  | .90                | .68                | 35.5             | Coal                   | dull lustrous with bright bands up to 1 cm thick, sheared, highly broken and powdered in places                                                | VIT 5      |
| 13      |         | 36.1  | 36.55 | .45                | .33                |                  | Mudstone               | silty towards base, numerous carbonaceous plant remains                                                                                        |            |
| 13      |         | 36.55 | 36.75 | .20                | .15                | 37.0             | Carbonaceous Mudstone  | as above                                                                                                                                       |            |
| 13      | 46°     | 36.75 | 38.07 | 1.32               | .95                |                  | Sandstone              | with muddy siltstone interlamination, rootlets, cross laminated, calcite veinlets parallel to bedding, coal stringers, grades to mudstone base |            |
| 13/14   |         | 38.07 | 38.61 | .54                | .40                | 38.5             | Mudstone               | carbonaceous                                                                                                                                   |            |
| 14      | 50°     | 38.61 | 39.23 | .62                | .47                |                  | Mudstone               | carbonaceous, occasional 20 cm laminated fine grained sandstone interbeds, abundant roots in sandstone                                         |            |
|         |         | 39.23 | 39.37 | .14                | .11                |                  | Lost Core              |                                                                                                                                                |            |
| 14/15   |         | 39.37 | 40.91 | 1.54               | 1.25               | 40.0             | Mudstone               | as above, becoming more carbonaceous and less sandy towards base                                                                               |            |
| 15      |         | 40.91 | 41.6  | .69                | .57                | 41.5             | Mudstone               | carbonaceous, 5 cm thick siltstone interbed in middle, leaf fossil                                                                             |            |

| Box No. | BCA (°)    | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                  | Sample No. |
|---------|------------|-------------|----|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From        | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                  |            |
| 15      |            | 41.6-42.0   |    | .40                | .34                |                  | Coal                   | dull lustrous, highly sheared, occasional thin bright bands, very muddy in middle of unit, highly broken and powdered            | VIT 6      |
| 15      |            | 42.0-42.48  |    | .48                | .42                |                  | Mudstone               | silty                                                                                                                            |            |
| 15      |            | 42.48-43.13 |    | .65                | .57                | 43.0             | Mudstone               | carbonaceous at top, coal stringers, slickensided surfaces                                                                       |            |
| 16      | 63°        | 43.13-43.44 |    | .31                | .28                |                  | Sandstone              | grading down into a mudstone, calcite stringers sub-parallel to bedding, laminated                                               |            |
| 16      |            | 43.44-43.49 |    | .05                | .04                |                  | Mudstone               | carbonaceous, broken                                                                                                             |            |
|         |            | 43.49-44.04 |    | .55                | .47                |                  | Lost Core              | (Mudstone)                                                                                                                       |            |
| 16      |            | 44.04-44.25 |    | .21                | .17                | 44.5             | Coal                   | dull, gradational upper contact, rare bright wisps throughout, moderately broken                                                 | VIT 7      |
| 16      |            | 44.25-44.42 |    | .17                | .13                |                  | Mudstone               | carbonaceous, coaly at base, polished surfaces                                                                                   |            |
| 16      | 45°<br>45° | 44.42-45.54 |    | 1.12               | .79                |                  | Sandstone/<br>Mudstone | sandier towards base, 8 cm carbonaceous siltstone at base of unit, calcite wisps and calcite-filled fractures oblique to bedding |            |

| Box No. | BCA (°)           | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                      | Sample No. |
|---------|-------------------|-------|-------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                   | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                      |            |
| 16-17   |                   | 45.54 | 46.59 | 1.05                | .74                 | 46.0             | Mudstone               | carbonaceous with coaly wisps and mm thick bright coal bands                                                                                                         | VIT 8 ✓    |
| 17      |                   | 46.59 | 46.71 | .12                 | .09                 |                  | Coal                   | dull with bright bands, highly broken                                                                                                                                |            |
| 17      |                   | 46.71 | 46.97 | .26                 | .19                 |                  | Mudstone               | carbonaceous, coaly stringers throughout, polished carbonaceous surfaces, moderately broken                                                                          |            |
| 17      | 47°<br>32°        | 46.97 | 47.65 | .68                 | .43                 | 47.8             | Sandstone              | with mudstone laminations, cross-laminated, calcite veinlets parallel and perpendicular to bedding                                                                   |            |
| 17      |                   | 47.65 | 47.79 | .14                 | .09                 |                  | Mudstone               | coaly                                                                                                                                                                |            |
| 17      |                   | 47.79 | 48.41 | .62                 | .43                 |                  | Mudstone               | top half is carbonaceous, polished carbonaceous surfaces, calcite wisps, slightly sandy towards base                                                                 |            |
| 17-18   | 52°<br>42°<br>47° | 48.41 | 49.99 | 1.58                | 1.16                | 49.3             | Sandstone              | with mudstone laminations, cross-laminated, bioturbated, soft sediment deformation, convoluted bedding, calcite wisps parallel to bedding, sandstone is fine grained |            |

| Box No. | BCA (°)           | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                 | Sample No. |
|---------|-------------------|-------|-------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                   | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                 |            |
| 18-19   | 52°               | 49.99 | 51.48 | 1.49               | 1.17               | 50.9             | Sandstone              | as above, muddy towards base                                                                                                                    |            |
| 19      | 47°<br>50°        | 51.48 | 52.14 | .66                | .49                | 51.4             | Sandstone              | as above, finely laminated, muddy at base, sandstone in very fine grained                                                                       |            |
| 19      |                   | 52.14 | 52.18 | .04                | .03                |                  | Claystone              | light grey, powdery, soft, slightly silty                                                                                                       |            |
| 19      | 52°               | 52.18 | 52.99 | .81                | .64                |                  | Siltstone              | medium dark grey with sandstone laminations throughout, smooth joint plane at high angle to bedding, calcite veinlets parallel to bedding       |            |
| 19-20   | 53°<br>47°        | 52.99 | 54.42 | 1.43               | 1.10               | 53.9             | Sandstone              | with mudstone interlaminations, sandstone is very fine grained, cross-laminated, numerous calcite-lined joint planes at a high angle to bedding |            |
| 20      | 31°<br>50°<br>50° | 54.42 | 55.55 | 1.13               | .78                | 55.4             | Mudstone               | dark grey, occasional sandstone interlaminations, gradational lower boundary                                                                    |            |
| 20      |                   | 55.55 | 55.98 | .43                | .33                |                  | Sandstone              | fine to medium grained, cross laminated, calcite lined joint surfaces parallel to bedding especially at base of unit                            |            |
| 20      |                   | 55.98 | 56.44 | .46                | .35                | 56.9             | Sandstone              | fine grained, mudstone interlaminations, calcite wisps, burrows, mottled                                                                        |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                   | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                   |            |
| 21      | 50°     | 56.44 | 57.43 | .99                | .76                |                  | Siltstone/<br>Sandstone | sandstone is very fine grained, siltstone is argillaceous, interlaminated, calcite veins (up to 0.5 cm thick) parallel to bedding, occasional carbonaceous plant fragments, small coaly stringers |            |
| 21      | 55°     | 57.43 | 58.95 | 1.52               | 1.25               | 58.5             | Siltstone/<br>Sandstone | as above, soft sediment deformation                                                                                                                                                               |            |
| 21/22   | 55°     | 58.95 | 60.55 | 1.6                | 1.31               | 60.0             | Siltstone/<br>Sandstone | as above, becomes sandier towards base, rough planar joint perpendicular to bedding                                                                                                               |            |
| 22/23   | 51°     | 60.55 | 62.07 | 1.52               | 1.18               | 61.5             | Sandstone               | very fine grained, soft sediment deformation, bedding is indistinct, grades into siltstone in places, good stick core, rare coaly stringers                                                       |            |



| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                                                                                     |                                                                                                                                | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                                                                                                                       | Amplified (Include Coal Recovery for Each Seam)                                                                                |            |
| 23      | 51°     | 62.07 | 62.15 | .08                | .06                |                  | Mudstone                                                                                                                   | slightly silty, coal stringers, carbonaceous plant remains.                                                                    | PLY I ✓    |
| 23      |         | 62.15 | 62.65 | .50                | .39                | 63.0             | Mudstone                                                                                                                   | as above, polished surfaces, thin coal stringers, highly broken in middle.                                                     |            |
|         |         | 62.65 | 63.16 | .51                | .40                |                  | LOST CORE                                                                                                                  | (mudstone-coaly)                                                                                                               |            |
|         |         | 63.16 | 63.22 | .06                | .05                |                  | LOST CORE                                                                                                                  | (coal)                                                                                                                         |            |
| 23      |         | 63.22 | 63.24 | .02                | .02                |                  | Coal                                                                                                                       | bright, sheared, broken                                                                                                        |            |
| 23      |         | 63.24 | 63.37 | .13                | .10                |                  | Coal                                                                                                                       | dull banded, lustrous due to shearing                                                                                          |            |
| 23      |         | 63.37 | 63.45 | .08                | .06                |                  | Mudstone                                                                                                                   | carbonaceous, polished surfaces, thin bright coal bands                                                                        |            |
| 23      |         | 63.45 | 63.53 | .08                | .06                |                  | Coal                                                                                                                       | dull banded, lustrous due to shearing, broken at base                                                                          |            |
| 23      |         | 63.53 | 63.61 | .08                | .06                |                  | Coal                                                                                                                       | highly broken and powdered, sheared, dull lustrous with 20% bright bands                                                       |            |
| 23      |         | 63.61 | 63.85 | .24                | .19                |                  | Boney Coal<br>SAMPLE                                                                                                       | with occasional bright bands, occasional mudstone bands, hard, calcite-lined slickensides.<br>PLY I 63.22-63.85 meter interval |            |
| 23      | 63.85   | 64.06 | .21   | .16                |                    | Mudstone         | ground at base, carbonaceous plant remains, slightly silty, pyrite flecks, rare thin bright coal bands, polished surfaces. |                                                                                                                                |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                           | Sample No.       |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------|------------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                           |                  |
| 24      | 60°     | 64.06 | 64.58 | .52                | .45                |                  | Mudstone               | polished surfaces, occasional carbonaceous plant remains, some coaly stringers in middle, broken at base. | PLY II<br>BULK ✓ |
| 23      |         | 64.58 | 64.64 | .06                | .05                |                  | Mudstone               | carbonaceous, polished surfaces.                                                                          |                  |
| 23      |         | 64.64 | 64.98 | .34                | .26                |                  | Coaly Mudstone         | thin, bright coal bands, hard, moderately broken core, polished surfaces.                                 |                  |
|         |         | 64.98 | 65.23 | .25                | .19                |                  | Lost Coaly Mudstone    |                                                                                                           |                  |
| 23      |         | 65.23 | 65.39 | .16                | .12                | 65.0             | Mudstone               | polished surfaces, thin bright coal bands.                                                                |                  |
| 23      |         | 65.39 | 65.80 | .41                | .36                | 64.5             | Coal                   | dull banded, lustrous due to shearing, broken and powdered.                                               |                  |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                              | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                              |            |
| 24      |         | 65.80 | 65.90 | .10                | .09                |                  | LOST CORE              | coal                                                                         |            |
|         |         |       |       |                    |                    |                  | SAMPLE                 | PLY II 65.39-65.90 meter interval                                            | PLY II ✓   |
| 24      |         | 65.90 | 65.99 | .09                | .08                |                  | Coal                   | dull banded, some muddy lenses near top, broken into blocks.                 |            |
| 24      |         | 65.99 | 66.62 | .63                | .55                |                  | Coal                   | top half is sheared, good stick, bright and dull, good cleat in bottom half. | VIT 9 ✓    |
| 24      |         | 66.62 | 66.65 | .03                | .03                |                  | Coal                   | broken into blocks, as above.                                                | PLY III ✓  |
| 24      |         | 66.65 | 66.79 | .14                | .12                |                  | Coal                   | dull banded, good stick, cleated.                                            |            |
| 24      |         | 66.79 | 67.32 | .53                | .46                |                  | Coal                   | dull with bright bands, good stick.                                          |            |
| 24      |         | 67.32 | 67.36 | .04                | .03                |                  | Coal                   | grades to mudstone at base, ground at base.                                  |            |
|         |         | 67.36 | 67.50 | .14                | .12                |                  | LOST CORE              | coal                                                                         | BULK       |
|         |         |       |       |                    |                    |                  | SAMPLE                 | PLY III 65.90-67.50 meter interval                                           | MAC        |
| 24      |         | 67.50 | 67.53 | .03                | 67.6               |                  | Mudstone               | coaly                                                                        |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                            | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)            |            |
| 24      |         | 67.53 | 67.56 | .03                | .03                |                  | Coal                   | boney                                                      | PLY IV ✓   |
| 24      |         | 67.56 | 67.61 | .05                | .05                |                  | Mudstone/Coal          | broken and mixed together in tiny pieces                   |            |
| 24      |         | 67.61 | 67.79 | .18                | .17                |                  | Mudstone               | carbonaceous, polished surfaces                            |            |
| 24      |         | 67.79 | 67.86 | .07                | .07                |                  | Coal                   | dull, streaks black, soft, powdered and broken             |            |
| 24      |         | 67.86 | 67.91 | .05                | .05                |                  | Coaly Mudstone         | powdered and wet                                           |            |
| 24      |         | 67.91 | 67.98 | .07                | .07                |                  | Coaly Mudstone         | polished surfaces, powdery and broken                      |            |
| 24      | 70°     | 67.98 | 68.03 | .05                | .07                |                  | Mudstone               | with bright coal bands, sheared and polished, hard, broken |            |
|         |         | 68.03 | 68.16 | .13                | .12                |                  | LOST CORE              | (mudstone)                                                 |            |

| Box No. | BCA (°) | Depth       |    | App. Thick- (m) | True Thick- (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                    | Sample No. |
|---------|---------|-------------|----|-----------------|-----------------|------------------|------------------------|------------------------------------------------------------------------------------|------------|
|         |         | From        | To |                 |                 |                  |                        |                                                                                    |            |
| 25      |         | 68.16-68.19 |    | .03             | .03             |                  | Coal                   | bright, sheared                                                                    |            |
| 25      |         | 68.19-68.21 |    | .02             | .02             |                  | Mudstone               | thin bright coal bands, sheared, calcite veining, polished surfaces                | PLY IV ✓   |
| 25      |         | 68.21-68.27 |    | .06             | .06             |                  | Coaly Mudstone         | carbonaceous plant remains                                                         |            |
| 25      |         | 68.27-68.32 |    | .05             | .05             |                  | Coal                   | dull banded                                                                        |            |
| 25      |         | 68.32-68.38 |    | .06             | .06             |                  | Coal                   | bright banded, highly broken, sheared                                              |            |
| 25      |         | 68.38-68.44 |    | .06             | .06             |                  | LOST COAL              |                                                                                    |            |
| 25      |         | 68.44-68.57 |    | .13             | .12             |                  | Mudstone               | polished surfaces, thin bright coal bands, calcite veining, carbonaceous           |            |
| 25      |         | 68.57-68.64 |    | .07             | .07             |                  | Coal                   | dull banded, powder                                                                | MAC        |
| 25      |         | 68.64-68.70 |    | .06             | .06             |                  | LOST COAL              |                                                                                    |            |
| 25      |         | 68.70-68.80 |    | .10             | .09             |                  | LOST MUDSTONE SAMPLE   | PLY IV 67.50-68.80 meter interval                                                  | BULK       |
| 25      |         | 68.80-68.98 |    | .18             | .17             | 68.1             | Coal                   | broken into blocks, sheared, dull and bright                                       |            |
| 25      |         | 68.98-69.11 |    | .13             | .12             |                  | Coal                   | dull banded, mudstone lens at top and bottom                                       |            |
| 25      |         | 69.11-69.20 |    | .09             | .08             |                  | Coal                   | dull banded, powdered                                                              |            |
| 25      |         | 69.20-69.29 |    | .09             | .08             |                  | Coal                   | dull with some thin bright bands and some mudstone bands, lustrous due to shearing |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                   | Sample No.  |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                   |             |
| 25      |         | 69.29 | 69.34 | .05                | .05                |                  | Coal                   | dull with some bright bands, highly broken                                                                                        |             |
| 25      |         | 69.34 | 69.36 | .02                | .02                |                  | Coal                   | bright                                                                                                                            | PLY V ✓     |
| 25      |         | 69.36 | 69.41 | .05                | .05                |                  | Coal<br>SAMPLE         | dull banded, powder<br>PLY V 68.80-69.41 meter interval                                                                           | BULK<br>MAC |
| 25      |         | 69.41 | 69.46 | .05                | .05                |                  | Coaly Mudstone         | hard                                                                                                                              |             |
| 25      | 30-35°  | 69.46 | 70.23 | .77                | .41                |                  | Siltstone              | argillaceous, sandstone interlamina-<br>tions in middle and at base, carbonaceous<br>plant remains, grades into mudstone at base. |             |
| 25      |         | 70.23 | 70.64 | .41                | .22                | 70.7             | Mudstone               | good stick, rare carbonaceous plant remains                                                                                       |             |

| Box No. | BCA (°)    | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                 | Sample No. |
|---------|------------|-------|-------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                 |            |
| 25-26   |            | 70.64 | 71.33 | .69                 | .37                 |                  | Mudstone               | grades to siltstone at base, carbonaceous plant remains, broken in middle (probably due to drillers).                                                                                                                                                                                                           |            |
|         |            | 71.33 | 71.44 | .11                 | .06                 |                  | LOST CORE              | (Mudstone)                                                                                                                                                                                                                                                                                                      |            |
| 26      |            | 71.44 | 71.96 | .52                 | .40                 |                  | Sandstone              | very fine grained to fine grained, rare carbonaceous stringers.                                                                                                                                                                                                                                                 |            |
|         |            | 71.96 | 72.29 | .33                 | .27                 | 72.2             | Sandstone              | as above grades to siltstone and then mudstone at base.                                                                                                                                                                                                                                                         |            |
|         |            | 72.29 | 73.04 | .75                 | .61                 |                  | Mudstone               | very slightly silty, polished surfaces, rare carbonaceous stringers, grades to siltstone at base.                                                                                                                                                                                                               |            |
| 26      |            | 73.04 | 73.42 | .38                 | .31                 |                  | Sandstone              | very fine grained, silty interbeds, calcite veining.                                                                                                                                                                                                                                                            |            |
| 27      | 60°<br>50° | 73.42 | 74.75 | 1.33                | 1.09                | 73.7             | Sandstone              | fine grained, siltstone interbeds 10 cm thick, cross laminated, soft sediment deformation, calcite veining perpendicular to bedding, carbonaceous stringers, 30 cm mudstone band with well polished surfaces - obviously took up strain in mudstones by sliding, calcite veining in sandstones from fracturing. |            |
| 27      |            | 74.75 | 75.20 | .45                 | .37                 | 75.2             | Mudstone               | polished surfaces, carbonaceous plant fragments, thin bright coal stringers, becomes more coaly at base.                                                                                                                                                                                                        |            |
| 27      |            | 75.20 | 75.30 | .10                 | .08                 |                  | LOST COAL              |                                                                                                                                                                                                                                                                                                                 |            |
| 27      |            | 75.30 | 75.45 | .15                 | .12                 |                  | Coal                   | powdered and broken, muddy at top, mostly dull with bright flecks                                                                                                                                                                                                                                               | VIT 10 ✓   |
| 27      |            | 75.45 | 75.89 | .44                 | .36                 |                  | Mudstone               | carbonaceous with coal stringers, becomes silty towards base.                                                                                                                                                                                                                                                   |            |
| 27      |            | 75.89 | 75.96 | .07                 | .06                 |                  | Sandstone              | very fine grained, with extensive calcite veining perpendicular to bedding, 1 to 2 mm thick.                                                                                                                                                                                                                    |            |

| Box No. | BCA (°) | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|-------------|----|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From        | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                           |            |
| 28      | 55°     | 75.96-76.22 |    | .26                | .21                |                  | Mudstone               | silty with occasional 10 cm fine grained sandstone interbeds, occasional coal bands, becomes silty towards the base, slickensides and polished surfaces, BOX 28 is 95% mudstone.                                                                          |            |
|         |         | 76.22-77.75 |    | 1.53               | 1.25               | 76.7             | Mudstone               | as above                                                                                                                                                                                                                                                  |            |
|         |         | 77.75-78.73 |    | .98                | .73                | 78.3             | Mudstone               | as above (ground in places by bit).                                                                                                                                                                                                                       |            |
| 29      | 42°     | 78.73-79.21 |    | .48                | .32                |                  | Sandstone              | very fine grained to fine grained, siltstone interbeds, occasional 20 cm mudstone interbeds, polished surfaces in the mudstone, cross - laminations, becoming coarser towards base, calcite veining parallel to bedding, rare carbonaceous plant remains. |            |
|         |         |             |    |                    |                    |                  |                        | Boxes 29, 28, and half of 27 are fining upward from sandstone to mudstone, top half of box 27 and boxes 26 and 25 represent a fining upward cycle from sandstone to coal.                                                                                 |            |
| 29      |         | 79.21-80.76 |    | 1.55               | 1.17               | 79.8             | Sandstone              | as above                                                                                                                                                                                                                                                  |            |
| 29/30   | 56°     | 80.76-82.74 |    | 1.98               | 1.64               | 81.3             | Sandstone              | as above, mudstone interbeds are thinner, calcite veining subparallel to bedding, calcite breccia (2 cm thick) containing angular sandstone pieces, disturbed bedding.                                                                                    |            |



| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                             | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                             |            |
| 30      |         | 82.74 | 83.76 | 1.02                | .79                 | 82.9             | Sandstone              | as above                                                                                                                                                                                                                                                                    |            |
| 31      | 45°     | 83.76 | 85.22 | 1.46                | 1.03                | 84.4             | Sandstone/<br>Mudstone | mudstone interbeds vary from 20-50 cm thick, sandstones average 50 cm thick, sandstone: fine grained, cross laminated, polished surfaces, rare calcite veining parallel and perpendicular to bedding, carbonaceous and coaly stringers in the mudstone, roots in sandstone. |            |
| 31/32   | 54°     | 85.22 | 86.71 | 1.49                | 1.21                | 85.9             | Sandstone/<br>Mudstone | as above                                                                                                                                                                                                                                                                    |            |
| 32      |         | 86.71 | 88.14 | 1.43                | 1.09                | 87.5             | Mudstone               | grades downward to very carbonaceous mudstone, carbonaceous plant remains throughout, some thin coal bands at base, polished carbonaceous surfaces, rare pyrite pods less than 1 cm.                                                                                        |            |
| 32      | 45°     | 88.14 | 88.34 | .20                 | .14                 | 89.0             | Sandstone/<br>Mudstone | 5 cm thick interbeds, sandstone: very fine grained, cross-laminated, mudstone is silty, pyrite pods 2 cm thick, carbonaceous plant remains on bedding surfaces.                                                                                                             |            |
|         |         |       |       |                     |                     |                  | NOTE:                  | Base of fining upward cycle.                                                                                                                                                                                                                                                |            |
| 32/33   |         | 88.34 | 88.57 | .23                 | .17                 |                  | Mudstone               | carbonaceous plant remains throughout.                                                                                                                                                                                                                                      |            |
| 33      |         | 88.57 | 88.88 | .31                 | .24                 |                  | Mudstone               | very carbonaceous thin coal stringers at base, broken at base                                                                                                                                                                                                               |            |
|         |         | 88.88 | 88.95 | .07                 | .05                 |                  | LOST CORE              | (mudstone)                                                                                                                                                                                                                                                                  |            |
|         |         | 88.95 | 88.99 | .04                 | .03                 |                  | Coal Loss              |                                                                                                                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                             | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                             |            |
| 33      |         | 88.99 | 89.16 | .17                 | .14                 |                  | Coal                   | powdered, sheared in places, dull banded                                                                                                                                                                                    | VIT 11 ✓   |
| 33      |         | 89.16 | 89.36 | .20                 | .16                 |                  | Coal                   | broken into blocks, bright and dull, lustrous due to shearing                                                                                                                                                               |            |
| 33      |         | 89.36 | 89.45 | .09                 | .08                 |                  | Coal/Mudstone          | grading down into carbonaceous mudstone in bottom 5 cm                                                                                                                                                                      |            |
| 33      | 60°     | 89.45 | 89.58 | .13                 | .11                 |                  | Sandstone              | 1 cm thick siltstone interbeds, calcite veinlets perpendicular to bedding, convoluted bedding, some carbonaceous laminations, some cross laminations                                                                        |            |
| 33      |         | 89.58 | 89.84 | .26                 | .18                 | 90.5             | Sandstone              | fine grained, extensive calcite veining at top, broken at top polished carbonaceous surfaces, silty laminations                                                                                                             |            |
| 33      |         | 89.84 | 90.8  | .96                 | .83                 |                  | LOST CORE              |                                                                                                                                                                                                                             |            |
| 33      |         | 90.8  | 91.45 | .65                 | .51                 |                  | Mudstone               | silty at top, very carbonaceous at base, ground at base, mm thick coal stringer at base.                                                                                                                                    |            |
| 33      |         | 91.45 | 91.6  | .15                 | .11                 |                  | LOST CORE              | (Mudstone)                                                                                                                                                                                                                  |            |
| 33/34   |         | 91.6  | 93.17 | 1.57                | 1.11                | 92.0             | Sandstone              | very fine grained, rootlets, carbonaceous plant fragments, bedding is indistinct.                                                                                                                                           |            |
| 34      | 42°     | 93.17 | 94.6  | 1.43                | .96                 | 93.5             | Sandstone              | as above with occasional siltstone interlaminations, calcite veining parallel to bedding, worm burrows, carbonaceous stringers, cross laminated, 3 cm thick fine grained sandstone interbeds in places, convoluted bedding. |            |

| Box No. | BCA (°) | Depth       |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                    | Sample No. |
|---------|---------|-------------|----|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From        | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                    |            |
| 34/35   |         | 94.6-95.52  |    | .92                 | .66                 | 95.0             | Sandstone              | as above, ball and pillow structures, bioturbated, 20 cm thick siltstone interbed in center                                                                                                                                                                                                                        |            |
|         |         |             |    |                     |                     |                  | NOTE:                  | Base of cyclothem                                                                                                                                                                                                                                                                                                  |            |
|         |         | 95.52-95.80 |    | .28                 | .21                 |                  | LOST CORE              |                                                                                                                                                                                                                                                                                                                    |            |
| 35      |         | 95.80-95.84 |    | .04                 | .03                 | 96.5             | Mudstone               | carbonaceous plant remains, slightly silty, pyrite flecks                                                                                                                                                                                                                                                          |            |
| 35      |         | 95.84-96.33 |    | .49                 | .41                 |                  | Mudstone               | as above, polished surfaces, calcite wisps, carbonaceous plant remains, thin coal stringers.                                                                                                                                                                                                                       |            |
| 35      | 60°     | 96.33-97.37 |    | 1.04                | .90                 |                  | Sandstone              | very fine grained; 10 cm thick siltstone interbeds, calcite veining parallel to bedding, cross laminated, worm burrows, rootlets.                                                                                                                                                                                  |            |
| 35/36   | 54°     | 97.37-98.20 |    | .83                 | .67                 | 98.1             | Sandstone              | fine grained, carbonaceous stringers, extensive rootlets, cross laminated, 0.25 cm thick calcite veins parallel to bedding, slickensided surfaces parallel to bedding, cross laminated, 10 cm thick siltstone interbeds, pyrite flecks on joint surfaces perpendicular to bedding, polished carbonaceous surfaces. |            |
| 36      | 44°     | 98.20-98.92 |    | .72                 | .50                 |                  | Siltstone              | argillaceous, 9 cm thick sandstone interbeds throughout, rootlets, calcite veins parallel to bedding, thin coal stringers at base.                                                                                                                                                                                 |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                |            |
| 36      | 46°     | 98.92-99.99   |    | 1.07                | .77                 | 99.6             | Mudstone               | carbonaceous, becoming silty towards base, thin coal stringer throughout, calcite veinlets parallel to bedding, polished surfaces                              |            |
|         |         | 99.99-100.5   |    | .51                 | .38                 |                  | LOST CORE              | (Mudstone)--Due to dropped lifter                                                                                                                              |            |
|         |         | 100.5-101.30  |    | .80                 | .61                 |                  | LOST CORE              | (Siltstone)--Due to dropped lifter                                                                                                                             |            |
| 36      |         | 101.30-101.69 |    | .39                 | .31                 |                  | Siltstone              | with very fine grained sandstone beds 10 cm thick, argillaceous in places                                                                                      |            |
| 36/37   |         | 101.69-102.8  |    | 1.11                | .90                 | 101.2            | Siltstone              | as above, grades downward to 20 cm thick mudstone at base of unit, at base of unit there is a 5 cm thick band of calcite filled fractures and brecciation      |            |
|         |         | 102.8-102.98  |    | .18                 | .15                 | 102.7            | Mudstone               | polished surfaces, slightly silty, becomes more silty towards base.                                                                                            |            |
| 37/38   |         | 102.98-104.23 |    | 1.25                | 1.06                |                  | Siltstone              | argillaceous throughout, occasional 3-10 cm thick fine grained sandstone interbeds, calcite wisps, rootlets throughout, rare coal stringers, polished surfaces |            |
|         | 60°     | 104.23-104.81 |    | .58                 | .50                 | 104.2            | Mudstone               | grading downwards to siltstone, thin coal stringers, carbonaceous plant remains, 1 cm thick very fine grained sandstone bands in lower half                    |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                              | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                              |            |
| 38      |         | 104.81 | 105.46 | .65                | .57                | 104.8            | Sandstone              | very fine grained, calcite veins parallel to bedding, silty at top, faint laminations, rootlets                                                              |            |
| 38      |         | 105.46 | 106.07 | .61                | .54                |                  | Siltstone              | argillaceous, good stick core, rare carbonaceous plant remains                                                                                               |            |
| 38/39   |         | 106.07 | 106.95 | .88                | .78                |                  | Mudstone               | carbonaceous with coal stringers at top, becomes silty towards base, rootlets throughout, rubbly at top                                                      |            |
| 39      | 64°     | 106.95 | 107.25 | .30                | .27                |                  | Sandstone              | fine grained, laminated, rootlets                                                                                                                            |            |
|         |         | 107.25 | 107.79 | .54                | .47                |                  | Mudstone               | silty especially towards base, carbonaceous plant remains and coaly stringers at top, ground core and rubbly at base, polished carbonaceous surfaces at base |            |
| 39/40   |         | 107.79 | 110.10 | 2.31               | 1.89               | 107.0            | Siltstone              | argillaceous, 30 cm thick sandy band towards base, calcite veining parallel to bedding, polished surfaces                                                    |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                       | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                       |            |
| 40      | 51°     | 110.10 | 110.83 | .73                 | .57                 |                  | Sandstone               | fine grained with 5 cm thick siltstone interbeds, siltier towards base, top 30 cm is very clean, faintly laminated, calcite lined joints at 90° to each other and perpendicular to bedding, rootlets. |            |
| 40      |         | 110.83 | 111.52 | .69                 | .57                 | 110.9            | Siltstone               | argillaceous, numerous carbonaceous plant remains at top, 10 cm thick very fine grained sandstone interbeds, cross-laminated, polished surfaces at base.                                              |            |
| 40      | 62°     | 111.52 | 111.89 | .37                 | .33                 |                  | Sandstone               | very fine grained, disturbed bedding, flame structures, calcite veinlets perpendicular to bedding, 2 cm pyrite nodules, carbonaceous stringers and rootlets, sharp lower contact                      |            |
| 40/41   |         | 111.89 | 112.84 | .95                 | .81                 |                  | Siltstone               | 5 cm thick fine grained sandstone interbed at the top, becomes increasingly argillaceous towards base, polished carbonaceous surfaces, rare carbonaceous plant remains                                |            |
| 41      |         | 112.84 | 113.01 | .17                 | .14                 |                  | Sandstone/<br>Siltstone | 5-10 cm thick interbeds, flame structures, faintly laminated                                                                                                                                          |            |
| 41      |         | 113.01 | 114.71 | 1.70                | 1.38                | 113.1            | Sandstone/<br>Siltstone | as above                                                                                                                                                                                              |            |

| Box No. | BCA (°)           | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                                                                                                                                                                               | Sample No. |
|---------|-------------------|--------|--------|---------------------|---------------------|------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                   | From   | To     |                     |                     |                  | MAIN                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                               |            |
| 42      | 51°               | 114.71 | 115.30 | .59                 | .46                 |                  | Sandstone/<br>Siltstone  | as above                                                                                                                                                                                                                                                                                                                      |            |
| 42/43   | 50°<br>38°<br>50° | 115.30 | 117.85 | 2.55                | 1.83                |                  | Sandstone                | fine grained, clean, some thin siltstone interlamina-<br>tions, calcite veining parallel and perpendicular to bedding, hard, cross-laminated numerous rootlets,<br>occasional polished carbonaceous surfaces, Coalified root in middle, 1 cm thick calcite filled fracture 1.2 m from top of unit, gradational lower contact. |            |
| 43      |                   | 117.85 | 118.55 | .70                 | .53                 | 118.0            | Siltstone/<br>Sandstone  | sandstone: fine grained, thin coal stringers towards base, faintly laminated, increasingly argillaceous towards base.                                                                                                                                                                                                         |            |
| 43      |                   | 118.55 | 118.95 | .40                 | .30                 |                  | Mudstone                 | grades upward to a silty mudstone, lower half is carbonaceous with some coaly stringers, polished surfaces.                                                                                                                                                                                                                   |            |
| 43      |                   | 118.95 | 119.27 | .32                 | .24                 |                  | Carbonaceous<br>Mudstone | some bright coal bands, polished surfaces, numerous carbonaceous plant remains                                                                                                                                                                                                                                                |            |
| 43      |                   | 119.27 | 119.60 | .33                 | .24                 |                  | Mudstone                 | carbonaceous, carbonaceous plant remains, polished surfaces, pyrite flecks                                                                                                                                                                                                                                                    |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                           |            |
| 43      |         | 119.60-119.70 |    | .10                | .07                |                  | Coal                   | bright, conchoidal fracture, pyrite flecks, highly broken.                                                                                                                                                                                | VIT 12 ✓   |
|         |         | 119.70-119.90 |    | .20                | .14                |                  | LOST COAL              |                                                                                                                                                                                                                                           |            |
| 44      |         | 119.90-119.98 |    | .08                | .06                |                  | Carbonaceous Mudstone  | polished surfaces, very thin coal stringers.                                                                                                                                                                                              |            |
| 44      |         | 119.98-120.24 |    | .26                | .19                |                  | Mudstone               | polished surfaces, coal stringers, carbonaceous plant remains, carbonaceous.                                                                                                                                                              |            |
|         |         | 120.24-120.56 |    | .32                | .23                |                  | LOST CORE              | (MUDSTONE)                                                                                                                                                                                                                                |            |
| 44      |         | 120.56-120.72 |    | .16                | .14                |                  | Coal                   | dull banded, powdered                                                                                                                                                                                                                     | VIT 13 ✓   |
|         |         | 120.72-120.78 |    | .06                | .04                |                  | Carbonaceous Mudstone  | as before                                                                                                                                                                                                                                 |            |
|         |         | 120.78-121.13 |    | .35                | .25                |                  | LOST COAL              |                                                                                                                                                                                                                                           |            |
| 44      |         | 121.13-121.20 |    | .07                | .05                | 121.0            | Coal                   | dull banded, sheared, broken                                                                                                                                                                                                              | VIT 14 ✓   |
| 44      |         | 121.20-121.39 |    | .19                | .14                |                  | Mudstone               | with bright coal bands up to 2 cm thick, polished surfaces, moderately broken.                                                                                                                                                            |            |
| 44      | 45°     | 121.39-123.29 |    | 1.90               | 1.34               |                  | Mudstone               | carbonaceous at top grading downward into a silty mudstone, bottom half has 5 cm thick sandstone bands, a few coal stringers throughout, calcite vein parallel to bedding in middle, large carbonaceous plant remains, polished surfaces. |            |
| 45      |         | 123.29-123.55 |    | .26                | .18                |                  | Mudstone               | carbonaceous with thin coal stringers, carbonaceous plant remains.                                                                                                                                                                        |            |
| 45      |         | 123.55-123.61 |    | .06                | .04                |                  | Coal                   | powdered, dull banded                                                                                                                                                                                                                     | VIT 15 ✓   |
| 45      |         | 123.61-123.69 |    | .08                | .05                |                  | Mudstone               | carbonaceous, carbonaceous plant remains, thin coal bands.                                                                                                                                                                                |            |



| Box No. | BCA (°)    | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Sample No. |
|---------|------------|--------|--------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                   |            |
| 45      |            | 123.69 | 123.94 | .25                 | .16                 | 124.0            | Mudstone               | grades into siltstone at base, carbonaceous with coal stringers in top half.                                                                                                                                                                                                                                                                                                                                                                                      |            |
| 45/46   | 40°<br>32° | 123.94 | 126.79 | 2.85                | 1.68                |                  | Mudstone/<br>Sandstone | sandstone is very fine grained, top part of unit at one mudstone sandstone boundary there are round sandstone intraclasts in the underlying mudstone, sandstone is bioturbated with rare carbonaceous stringers, mudstone has carbonaceous plant remains, coal stringers and polished surfaces, wispy calcite veins parallel to bedding, mudstone interbeds range 50 cm to 1 m thick, sandstone interbeds range from 30-50 cm thick, 70% mudstone: 30% sandstone. |            |
| 46/47   | 35°        | 126.79 | 129.89 | 3.10                | 1.78                | 127.0            | Sandstone/<br>Mudstone | as above, sandstone is more predominant towards the base, flame structures, cross laminations                                                                                                                                                                                                                                                                                                                                                                     |            |
| 47/48   | 40°        | 129.89 | 132.51 | 2.62                | 1.68                | 130.2            | Sandstone/<br>Mudstone | as above, 50-50 sandstone: mudstone, large worm burrows in top half.                                                                                                                                                                                                                                                                                                                                                                                              |            |
| 48      |            | 132.51 | 132.95 | .44                 | .26                 |                  | Sandstone/<br>Mudstone | sandstone is fine grained, mudstone is silty, coal stringers, rootlets, disturbed bedding, extensive 1/2 cm thick calcite veins, slightly brecciated.                                                                                                                                                                                                                                                                                                             |            |
| 48      | 32°        | 132.95 | 134.5  | 1.55                | .82                 | 133.2            | Mudstone/<br>Sandstone | mudstone interbeds are 15-50 cm thick, sandstone interbeds are 10 cm thick and fine grained, mudstones are slightly silty, slickensided calcite surfaces.                                                                                                                                                                                                                                                                                                         |            |
| 49      |            | 134.5  | 135.23 | .73                 | .43                 |                  | Mudstone               | carbonaceous plant remains, polished surfaces, coal stringers.                                                                                                                                                                                                                                                                                                                                                                                                    |            |
| 49      |            | 135.23 | 135.57 | .34                 | .21                 |                  | Sandstone              | fine grained, laminated and cross laminated, calcite crystals lining joint plane perpendicular to bedding, pyrite specks, (slightly higher energy than previously described sandstones), grades into mudstone at base, possible core loss at top.                                                                                                                                                                                                                 |            |

| Box No. | BCA (°)       | Depth         |     | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                      |                                                                                                                                                                                                                    | Sample No. |          |
|---------|---------------|---------------|-----|---------------------|---------------------|------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|
|         |               | From          | To  |                     |                     |                  | MAIN                                        | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                    |            |          |
| 49      | 42°           | 135.57-136.02 |     | .45                 | .30                 |                  | Mudstone/<br>Sandstone                      | mudstone has carbonaceous plant remains and coal stringers, sandstone is very fine grained and interbeds are 5-15 cm thick, mudstone: sandstone = 80 : 20%.                                                        |            |          |
| 49      |               | 136.02-137.33 |     | 1.31                | .89                 | 136.3            | Mudstone/<br>Sandstone                      | as above, polished carbonaceous surfaces in the mudstone.                                                                                                                                                          |            |          |
| 50      |               | 137.33-138.55 |     | 1.22                | .83                 |                  | Sandstone                                   | fine to upper fine grained, base of cyclothem, carbonaceous laminae, 2-5 cm thick siltstone interbeds, calcite veining perpendicular and parallel to bedding, polished carbonaceous surfaces, thin coal stringers. |            |          |
|         |               | 138.55-138.64 |     | .09                 | .06                 |                  | LOST CORE                                   | (sandstone)                                                                                                                                                                                                        |            |          |
| 50      |               | 138.64-138.86 |     | .22                 | .16                 |                  | Carbonaceous/<br>Mudstone                   | coaly, polished surfaces, broken at base.                                                                                                                                                                          |            |          |
|         |               | 138.86-138.87 |     | .01                 | .01                 |                  | LOST CORE                                   | (coal)                                                                                                                                                                                                             |            |          |
| 50      |               | 138.87-138.92 |     | .05                 | .04                 | 139.3            | Coal                                        | dull banded, powdered                                                                                                                                                                                              |            | VIT 16 ✓ |
| 50      |               | 138.92-139.19 |     | .27                 | .19                 |                  | Carbonaceous/<br>Mudstone                   | numerous carbonaceous plant remains and polished surfaces, thick coal bands.                                                                                                                                       |            |          |
|         |               | 139.19-139.24 |     | .05                 | .04                 |                  | Carbonaceous/<br>Mudstone                   | as above, rubble                                                                                                                                                                                                   |            |          |
|         |               | 139.24-139.39 |     | .15                 | .11                 |                  | Coaly/Mudstone                              | polished surfaces, moderately broken                                                                                                                                                                               |            |          |
|         |               |               |     |                     |                     | SAMPLE           | PLY VI 138.64-139.39 meter interval         | BULK PLY VI ✓                                                                                                                                                                                                      |            |          |
|         | 139.39-139.56 |               | .17 | .12                 |                     | Coal             | dull lustrous with a few bright bands, hard | VIT 17 ✓                                                                                                                                                                                                           |            |          |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION              |                                                                                                          | Sample No.               |
|---------|---------|---------------|----|--------------------|--------------------|------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------|
|         |         | From          | To |                    |                    |                  | MAIN                                | Amplified (Include Coal Recovery for Each Seam)                                                          |                          |
|         |         | 139.56-140.33 |    | .77                | .54                |                  | LOST COAL                           |                                                                                                          |                          |
|         |         | 140.33-140.46 |    | .13                | .09                |                  | SAMPLE<br>Carbonaceous/<br>Mudstone | PLY VII 139.39-140.33 meter interval.<br>with coaly bands carbonaceous plant remains, polished surfaces. | PLY VII ✓<br>BULK<br>MAC |
|         |         | 140.46-140.61 |    | .15                | .11                |                  | SAMPLE<br>Carbonaceous/<br>Mudstone | as above, highly broken<br>PLY VIII 140.33-140.61 meter interval                                         | PLY VIII ✓               |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION              |                                                                                                                      | Sample No.   |
|---------|---------|---------------|----|--------------------|--------------------|------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------|
|         |         | From          | To |                    |                    |                  | MAIN                                | Amplified (Include Coal Recovery for Each Seam)                                                                      |              |
| 50      |         | 140.61-140.69 |    | .08                | .06                |                  | Coal                                | powdered, dull banded                                                                                                |              |
|         |         | 140.69-141.59 |    | .90                | .63                |                  | LOST COAL                           |                                                                                                                      |              |
| 50/51   |         | 141.59-141.65 |    | .06                | .04                | 141.5            | Coal                                | powdered, dull banded                                                                                                |              |
|         |         | 141.65-141.70 |    | .05                | .03                |                  | LOST COAL                           |                                                                                                                      |              |
| 51      |         | 141.70-141.81 |    | .11                | .08                |                  | Coal/Carbonaceous Mudstone          | rubble, pieces of dull lustrous banded coal mixed up with pieces of carbonaceous mudstone.                           |              |
|         |         | 141.81-142.04 |    | .23                | .16                |                  | LOST COAL AND CARBONACEOUS MUDSTONE |                                                                                                                      |              |
| 51      |         | 142.04-142.19 |    | .15                | .10                |                  | Coal                                | powdered and blocky, dull banded                                                                                     | VIT 18 ✓     |
| 51      |         | 142.19-142.27 |    | .08                | .06                | 142.4            | Coal                                | dull lustrous with a few bright bands, broken and blocky                                                             |              |
| 51      |         | 142.27-142.49 |    | .22                | .15                |                  | Coal                                | dull lustrous banded, some bright bands are 1 cm thick                                                               | BULK MAC     |
|         |         | 142.49-142.55 |    | .06                | .04                |                  | LOST CORE                           | (Coal)                                                                                                               |              |
|         |         |               |    |                    |                    |                  | SAMPLE                              | PLY IX 140.61-142.55 meter interval                                                                                  | PLY IX ✓     |
| 51      |         | 142.55-142.89 |    | .34                | .24                |                  | Mudstone                            | carbonaceous, few bright coal bands in top 10 cm, coal stringers throughout, good stick core, few polished surfaces. |              |
|         |         |               |    |                    |                    |                  | SAMPLE                              | PLY X 142.55-142.89 meter interval                                                                                   | BULK PLY X ✓ |
|         |         | 142.89-142.91 |    | .02                | .01                |                  | LOST CORE                           | (coal)                                                                                                               |              |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                            |                                                                                                                                                                                                                                                                | Sample No.              |
|---------|---------|---------------|----|---------------------|---------------------|------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|         |         | From          | To |                     |                     |                  | MAIN                                              | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                |                         |
| 51      |         | 142.91-143.03 |    | .12                 | .08                 |                  | Coal                                              | dull lustrous banded, some bright bands are 1 cm thick.                                                                                                                                                                                                        | BULK<br>MAC<br>PLY XI ✓ |
|         |         | 143.03-143.09 |    | .06                 | .04                 |                  | LOST CORE                                         | (Mudstone)                                                                                                                                                                                                                                                     |                         |
| 51      |         | 143.09-143.13 |    | .04                 | .03                 |                  | Mudstone                                          | carbonaceous with some coal stringers.                                                                                                                                                                                                                         |                         |
|         |         | 143.13-143.36 |    | .23                 | .16                 |                  | LOST CORE                                         | (coal)                                                                                                                                                                                                                                                         |                         |
| 51      |         | 143.36-143.41 |    | .05                 | .03                 |                  | Broken Coal and<br>Mudstone<br>SAMPLE<br>Mudstone | broken and rubbly, pieces of dull coal, bright coal and mudstone mixed together<br><br>PLY XI 142.89-143.41 meter interval.<br>carbonaceous, plant remains, thin coal bands throughtout, grades to very fine grained sandstone at base, few polished surfaces. |                         |
| 51      |         | 143.64-144.09 |    | .45                 | .32                 |                  | Sandstone                                         | very fine grained, slightly argillaceous, siltstone laminations (indistinct).                                                                                                                                                                                  |                         |
| 51      |         | 144.09-144.35 |    | .26                 | .21                 |                  | Mudstone                                          | carbonaceous plant remains, some polished surfaces, occasional coaly stringers, grades downward into siltstone at base.                                                                                                                                        |                         |

| Box No. | BCA (°)    | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                      | Sample No. |
|---------|------------|---------------|----|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                      |            |
| 51-52   |            | 144.35-145.31 |    | .96                | .87                |                  | Sandstone/<br>Mudstone | sandier towards base, mottled, bioturbated, burrows, very fine grained and argillaceous sandstone, carbonaceous plant fragments throughout, calcite veining oblique to bedding (especially in the mudstone).                                                                                                         |            |
| 52      | 69°<br>71° | 145.31-146.80 |    | 1.49               | 1.40               | 145.4            | Sandstone              | very fine grained, some fine grained interbeds in top half, good stick, laminated, rootlets, burrows, calcite crystals on joint planes subparallel to bedding in top half, some mudstone interlaminations, mudstone band at top.                                                                                     |            |
| 52/53   |            | 146.80-148.38 |    | 1.58               | 1.48               |                  | Sandstone/<br>Mudstone | very fine grained and argillaceous sandstone, burrows, interbeds are 30-50 cm scale, sandstone: mudstone is 70:30, muddier towards base.                                                                                                                                                                             |            |
| 53      |            | 148.38-148.59 |    | .21                | .20                | 148.4            | Sandstone              | as above, vertical parallel calcite veins.                                                                                                                                                                                                                                                                           |            |
| 53      |            | 148.59-148.84 |    | .25                | .23                |                  | Mudstone               | very broken and ground.                                                                                                                                                                                                                                                                                              |            |
| 53/54   | 71°        | 148.84-150.30 |    | 1.46               | 1.38               |                  | Sandstone/<br>Mudstone | 80:20 sandstone to mudstone, 20 cm thick mudstone unit at 50 cm from top of unit--is slightly carbonaceous, sheared and broken with some calcite veinlets, sandstone is very fine to fine grained, mottled & bioturbated for the most part, some laminations visible, calcite-lined joints perpendicular to bedding. |            |
| 54      |            | 150.30-150.58 |    | .28                | .26                |                  | Mudstone               | homogenous, good stick                                                                                                                                                                                                                                                                                               |            |
| 54      |            | 150.58-150.62 |    | .04                | .04                |                  | Mudstone               | as above with thick (up to 1 cm) coal bands.                                                                                                                                                                                                                                                                         |            |
| 54      |            | 150.62-150.69 |    | .07                | .07                |                  | Mudstone               | as before                                                                                                                                                                                                                                                                                                            |            |
| 54      |            | 150.69-150.71 |    | .02                | .02                |                  | Coal                   | (as a bright lens in the mudstone)                                                                                                                                                                                                                                                                                   |            |
| 54      |            | 150.71-151.08 |    | .37                | .35                |                  | Mudstone               | coal bands throughout, slightly carbonaceous, very broken at base, polished surfaces.                                                                                                                                                                                                                                |            |
| 54      |            | 151.08-151.36 |    | .28                | .26                |                  | Sandstone              | very fine grained, argillaceous, bioturbated.                                                                                                                                                                                                                                                                        |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                 | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                 |            |
| 54      |         | 151.36 | 151.56 | .20                 | .19                 | 151.4            | Sandstone              | as above                                                                                                                                                                                                        |            |
| 54-55   |         | 151.56 | 153.26 | 1.70                | 1.59                |                  | Mudstone               | sandy laminations at top and in middle of units, mudstone has abundant coaly plant fragments throughout, occasional polished surfaces, rare coal stringers near base, gradational upper contact with sandstone. |            |
| 55      |         | 153.26 | 153.81 | .55                 | .51                 |                  | Sandstone              | very fine grained, mottled, argillaceous, cleaner near base, calcite veins oblique to bedding near base.                                                                                                        |            |
| 55      | 68°     | 153.81 | 155.02 | 1.21                | 1.12                | 154.5            | Sandstone/<br>Mudstone | interlaminated, muddier towards base, slightly carbonaceous at base with polished surfaces.                                                                                                                     |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                              | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                              |            |
| 56      |         | 155.02-157.81 |    | 2.79                | 2.59                |                  | Mudstone/<br>Siltstone | top 6 cm is very carbonaceous, mudstone is homogenous, good stick core, very thin calcite wisps, monotonous. |            |
| 56      |         | 157.81-157.86 |    | .05                 | .05                 |                  | Mudstone               | with very thin bright coal wisps throughout                                                                  |            |
| 56      |         | 157.86-157.94 |    | .08                 | .07                 |                  | Coaly Mudstone         | broken, thin coal bands, dull banded powdered coal mixed in                                                  |            |
| 56      |         | 157.94-158.09 |    | .15                 | .14                 |                  | LOST CORE              | (Mudstone)                                                                                                   |            |
| 56      |         | 158.09-158.36 |    | .27                 | .25                 | 157.6            | Mudstone               | very broken and ground, some stringers                                                                       |            |
| 56      |         | 158.36-159.03 |    | .67                 | .62                 |                  | Mudstone               | polished surfaces, silty at base                                                                             |            |
| 56      |         | 159.03-159.09 |    | .06                 | .06                 |                  | Coal/Mudstone          | pieces of dull coal and carbonaceous mudstone jumbled together                                               |            |
| 56      |         | 159.09-159.16 |    | .07                 | .06                 |                  | Coaly Mudstone         | with 10% bright coal bands, broken                                                                           |            |
| 56      |         | 159.06-159.60 |    | .54                 | .50                 |                  | Mudstone               | broken at base, silty at top, carbonaceous at base                                                           |            |
| 56      |         | 159.6-159.70  |    | .10                 | .09                 |                  | LOST CORE              | (Mudstone)                                                                                                   |            |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                            | Sample No.      |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                            |                 |
| 57-58   |         | 159.7  | 162.64 | 2.94               | 2.73               | 160.6            | Mudstone               | silty in places, carbonaceous plant fragments throughout, bottom half is carbonaceous in places with polished surfaces, coaly wisps and thin calcite stringers in bottom 1.5 m, gradational lower contact. | GSC<br>VIT 19 ✓ |
| 58-59   |         | 162.64 | 163.6  | .96                | .89                |                  | Sandstone              | with mudstone interlamination, grades to mudstone at base, burrows, good stick core, sandstone is very fine grained and argillaceous, bioturbated.                                                         |                 |
| 59      |         | 163.6  | 163.66 | .06                | .05                |                  | Mudstone               | carbonaceous, broken and ground, polished surfaces                                                                                                                                                         |                 |
|         |         | 163.66 | 164.20 | .54                | .50                |                  | LOST CORE              | (Mudstone)                                                                                                                                                                                                 |                 |
| 59      |         | 164.2  | 164.26 | .06                | .06                |                  | Coal                   | dull, broken, lustrous, with mudstone clasts                                                                                                                                                               |                 |
|         |         | 164.26 | 164.44 | .18                | .17                |                  | LOST COAL              |                                                                                                                                                                                                            |                 |
| 59      |         | 164.44 | 164.51 | .07                | .06                |                  | Coaly Mudstone         | some bright bands, hard, stoney                                                                                                                                                                            |                 |
|         |         | 164.51 | 164.69 | .18                | .17                |                  | LOST COAL              |                                                                                                                                                                                                            |                 |
| 59      |         | 164.69 | 164.71 | .02                | .02                |                  | Coal                   | highly broken, dull with bright                                                                                                                                                                            |                 |
| 59      |         | 164.71 | 164.89 | .18                | .17                |                  | Coaly Mudstone         | with thin, coal wisps throughout                                                                                                                                                                           |                 |
| 59      |         | 164.89 | 165.16 | .27                | .25                |                  | Mudstone               | homogenous and monotonous, occasional carbonaceous plant remains, good stick core.                                                                                                                         |                 |
| 59      |         | 165.16 | 165.7  | .54                | .49                | 163.6            | Mudstone               | as above                                                                                                                                                                                                   |                 |
| 59      |         | 165.7  | 165.72 | .02                | .02                |                  | Coaly Mudstone         | polished surfaces, bright bands, hard                                                                                                                                                                      |                 |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                        | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                        |            |
| 60      |         | 168.34 | 169.57 | 1.23                | 1.11                |                  | Sandstone               | very fine grained, disturbed bedding, faintly laminated, becoming silty towards base, also slightly argillaceous at base.                                                                                                              |            |
| 60      |         |        |        |                     |                     | 169.8            |                         |                                                                                                                                                                                                                                        |            |
| 61      | 64°     | 169.57 | 170.54 | .97                 | .87                 |                  | Siltstone/<br>Sandstone | siltstone is argillaceous, sandstone is very fine grained, faintly laminated, rootlets, soft sediment deformation and compaction structures, becoming more argillaceous towards base, rare coaly plant remains, hard, good stick core. |            |
| 61      |         | 170.54 | 171.08 | .54                 | .49                 |                  | Mudstone                | silty at top and carbonaceous in bottom half, numerous carbonaceous plant remains and coal stringers.                                                                                                                                  |            |
| 61      |         | 171.08 | 171.16 | .08                 | .07                 |                  | Coal                    | dull lustrous with bright bands, broken                                                                                                                                                                                                | VIT 22 ✓   |
| 61      |         | 171.16 | 171.29 | .13                 | .12                 |                  | Coal                    | as above, highly broken and powdered, sheared                                                                                                                                                                                          |            |
| 61      |         | 171.29 | 171.36 | .07                 | .06                 |                  | Coaly Mudstone          | with polished surfaces and thin bright coal bands                                                                                                                                                                                      |            |
| 61      |         | 171.36 | 171.5  | .14                 | .13                 |                  | Coal                    | mostly dull with a few bright specks, highly powdered, muddy in places                                                                                                                                                                 | VIT 23 ✓   |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                                                                   | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                   |            |
| 61      |         | 171.5-171.55  |    | .05                | .04                |                  | Carbonaceous Mudstone    | with carbonaceous plant remains and bright coal stringers                                                                                                                                                         |            |
| 61      |         | 171.55-171.91 |    | .36                | .32                |                  | Siltstone                | with a few mudstone interbeds at top and becoming more arenaceous towards the base, rare coal stringers at top.                                                                                                   |            |
| 61-62   |         | 171.91-172.84 |    | .93                | .84                |                  | Sandstone                | very fine grained, silty at top, sandstone laminations are highly disturbed, numerous rootlets, a few coal stringers and carbonaceous plant remains, calcite veinlets oblique to bedding, argillaceous throughout |            |
| 62      | 64°     | 172.84-173.4  |    | .56                | .50                | 172.8            | Sandstone                | grading to mudstone at base, cross laminated at top, coaly plant remains towards base, wispy calcite veinlets parallel to bedding, large worm burrow at base, few rootlets at base.                               |            |
| 62-63   |         | 173.4-175.71  |    | 2.31               | 2.06               |                  | Mudstone                 | carbonaceous with thin coal bands throughout, carbonaceous plant remains, thin 3 cm bright coal bands at 152 cm from top, slightly silty.                                                                         |            |
| 63      |         | 175.71-177.05 |    | 1.34               | 1.18               | 175.8            | Mudstone                 | as above, becoming more silty towards base, 5 cm very fine grained sandstone interbeds (lenticular) in bottom half, good stick core, carbonaceous plant fragments throughout.                                     |            |
| 63      |         | 177.05-177.75 |    | .70                | .61                |                  | Mudstone/<br>Sandstone   | as above, sandstone is dominant in top half, silty mudstone in bottom half, faint, wispy laminations in top third, dewatering pillar structures, rare coal stringers at base.                                     |            |
| 64      |         | 177.75-178.49 |    | .74                | .64                |                  | Carbonaceous<br>Mudstone | very black with numerous carbonaceous plant remains, thin bright coal bands throughout, wisps of calcite at top, broken, very coaly in bottom half.                                                               |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                       | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                       |            |
| 64      |         | 178.49 | 178.82 | .33                | .28                |                  | Core Loss              | (Coaly and Carbonaceous Mudstone)                                                     |            |
| 64      |         | 178.82 | 179.1  | .28                | .24                | 178.9            | Mudstone               | with bright coal stringers, with sandy interbeds at base, carbonaceous plant remains. |            |
| 64      |         | 179.1  | 179.40 | .30                | .26                |                  | Coal                   | dull lustrous and bright banded (50:50), broken, light                                | VIT 24 ✓   |
| 64      |         | 179.40 | 179.51 | .11                | .09                |                  | Coal                   | bright, crisp, light, conchoidal fracture, very good coal                             |            |
| 64      |         | 179.51 | 179.55 | .04                | .03                |                  | Coal                   | dull lustrous with bright bands (20%), broken                                         |            |
|         |         | 179.55 | 179.57 | .02                | .02                |                  | Lost Coal              |                                                                                       |            |
|         |         | 179.57 | 179.60 | .03                | .03                |                  | Coal                   | as above, highly broken                                                               |            |
| 64      |         | 179.6  | 179.70 | .10                | .09                |                  | Mudstone               | with carbonaceous plant remains and thin, bright coal bands                           |            |
| 64      |         | 179.70 | 179.77 | .07                | .06                |                  | Coaly Mudstone         | polished surfaces, bright coal bands up to .5 cm                                      |            |
| 64      |         | 179.77 | 179.81 | .04                | .03                |                  | Coal                   | dull banded with mudstone clasts                                                      |            |
| 64      |         | 179.81 | 179.87 | .06                | .05                |                  | Carbonaceous Mudstone  | thin bright coal bands                                                                |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                        | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                        |            |
| 64      |         | 179.87 | 179.96 | .09                 | .08                 |                  | Mudstone               | carbonaceous, silty towards base, pyrite flecks, thin bright coal bands at top.                                                                                                                        |            |
| 64      |         | 179.96 | 180.69 | .73                 | .62                 |                  | Siltstone              | with 5 cm thick sandstone interbeds in top half, good stick core, becomes argillaceous at base with large carbonaceous plant fragments and rare coal stringers.                                        |            |
| 65      |         | 180.69 | 181.78 | 1.09                | .91                 | 181.9            | Mudstone               | carbonaceous and coaly, silty at base, wispy calcite veinlets.                                                                                                                                         |            |
| 65-66   |         | 181.78 | 183.51 | 1.73                | 1.45                |                  | Siltstone              | coaly and carbonaceous plant remains, 5-10 cm sandstone interbeds in last 50 cm, the sandstone is very fine grained.                                                                                   |            |
| 66      |         | 183.51 | 184.03 | .52                 | .45                 |                  | Siltstone              | argillaceous and carbonaceous in top half with coalified plant remains, sandy towards base with 3 cm very fine grained sandstone interbeds, rootlets, disturbed bedding, calcite veinlets in top half. |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                         |            |
| 66      | 64°     | 184.03 | 184.82 | .79                | .71                |                  | Siltstone/<br>Sandstone  | thin 5-10 cm interbeds alternating sandstone and siltstone, siltstone is argillaceous with large coalified plant remains, sandstone is very fine to fine grained, with rootlets and large worm burrows. | VIT 25 ✓   |
| 66      |         | 184.82 | 184.98 | .16                | .14                | 185.0            | Sandstone                | very fine grained, clean, abrupt lower contact, very faint laminations.                                                                                                                                 |            |
| 66      |         | 184.98 | 185.23 | .25                | .22                |                  | Siltstone                | grades to mudstone at base, 3 cm very fine grained sandstone interbed half way down with pyrite layer 1 mm thick.                                                                                       |            |
| 66      |         | 185.23 | 185.30 | .07                | .06                |                  | Carbonaceous<br>Mudstone | thin bright coal bands throughout                                                                                                                                                                       |            |
| 66      |         | 185.30 | 185.33 | .03                | .03                |                  | Coaly Mudstone           |                                                                                                                                                                                                         |            |
| 66      |         | 185.33 | 185.38 | .05                | .04                |                  | Coal                     | bright banded, sheared                                                                                                                                                                                  |            |
|         |         | 185.38 | 185.48 | .10                | .09                |                  | Lost Coal                |                                                                                                                                                                                                         |            |
| 66      |         | 185.48 | 185.51 | .03                | .03                |                  | Coal                     | dull banded                                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                 | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                 |            |
| 66      |         | 185.51 | 185.57 | .06                | .05                |                  | Coal                   | dull lustrous due to shearing, some bright bands                                                                                |            |
| 66      |         | 185.57 | 185.60 | .03                | .03                |                  | Coal                   | bright, crisp, good cleat                                                                                                       |            |
| 66      |         | 185.60 | 185.68 | .08                | .07                |                  | Coal                   | sheared, slickensided, dull banded, bright bands up to .5 cm wide                                                               |            |
|         |         | 185.68 | 185.78 | .10                | .09                |                  | Lost Coal              |                                                                                                                                 |            |
| 66      |         | 185.78 | 185.80 | .02                | .02                |                  | Coal                   | powdered, bright                                                                                                                |            |
| 66      |         | 185.80 | 185.84 | .04                | .03                |                  | Mudstone               | carbonaceous, grades downwards into a siltstone, coal stringers, disseminated pyrite in upper half.                             |            |
| 66      |         | 185.84 | 186.11 | .27                | .24                |                  | Siltstone              | sandy at base, carbonaceous plant remains, grades downward to sandstone                                                         |            |
| 67      | 60°     | 186.11 | 186.88 | .77                | .67                |                  | Sandstone              | faint cross-laminations at top, numerous interbeds and interlaminations of silt and mud, rootlets, grades to siltstone at base. |            |
| 67      |         | 186.88 | 187.08 | .20                | .17                |                  | Siltstone              | bright coal stringers, wispy calcite veining, grades to mudstone at base                                                        |            |
| 67      |         | 187.08 | 187.82 | .74                | .65                |                  | Mudstone               | minor silty horizon in top half, bright coal bands (.5 cm), slickensides, carbonaceous plant remains.                           |            |
| 67      |         | 187.82 | 188.0  | .18                | .16                | 188.0            | Mudstone               | carbonaceous, large plant remains, becomes very coaly mudstone at base.                                                         |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                 | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                 |            |
| 67      |         | 188.0-188.06  |    | .06                 | .05                 |                  | Coal                   | boney with bright coal stringers                                                                                                                                                                                                                | VIT 26 ✓   |
| 67      |         | 188.06-188.15 |    | .09                 | .08                 |                  | Coaly Mudstone         | polished surfaces, highly broken                                                                                                                                                                                                                |            |
|         |         | 188.15-188.19 |    | .04                 | .04                 |                  | Lost Core              |                                                                                                                                                                                                                                                 |            |
| 67      |         | 188.19-188.22 |    | .03                 | .03                 |                  | Coal                   | dull banded, muddy clasts                                                                                                                                                                                                                       | VIT 27 ✓   |
| 67      |         | 188.22-188.4  |    | .18                 | .16                 |                  | Coaly Mudstone         | with bright coal stringers, polished surfaces                                                                                                                                                                                                   |            |
| 67      |         | 188.4-188.7   |    | .30                 | .27                 |                  | Carbonaceous Mudstone  | with carbonaceous plant remains, few bright coal stringers, blocky fracture                                                                                                                                                                     |            |
|         |         | 188.7-188.83  |    | .13                 | .12                 |                  | Lost Core              | (Mudstone)                                                                                                                                                                                                                                      |            |
| 68      |         | 188.83-190.35 |    | 1.52                | 1.40                |                  | Mudstone               | carbonaceous plant remains in top few centimeters, becoming silty towards base, core is grooved from vibrating bit, few carbonaceous plant remains at base, siltiest in middle of unit.                                                         |            |
| 68      |         | 190.35-190.66 |    | .31                 | .29                 |                  | Siltstone              | argillaceous, good stick core                                                                                                                                                                                                                   |            |
| 68-69   | 70°     | 190.66-192.1  |    | 1.44                | 1.35                | 1.91             | Siltstone              | as above with 10 cm fine grained sandstone interbeds towards base sandstone contains worm burrows and faint laminations, rootlets and rare thin long coal stringers, grading to carbonaceous mudstone at the base, polished surfaces in places. |            |
| 69      |         | 192.1-192.42  |    | .32                 | .28                 |                  | Carbonaceous Mudstone  | with up to 1 cm bright coal bands throughout, numerous carbonaceous plant remains, polished surfaces, broken at top.                                                                                                                            |            |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                   | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                   |            |
| 69      |         | 192.42 | 192.63 | .21                | .17                |                  | Siltstone               | grading from a silty mudstone to sandstone from top to base, rare coal stringers and polished carbonaceous surface.                                                                                                                                                                                                               |            |
| 69      | 42°     | 192.63 | 193.73 | 1.10               | .74                |                  | Sandstone               | very fine grained, faintly laminated, disturbed bedding in places, worm burrows, rootlets, mottled, rare coal stringers and polished surfaces, few calcite veinlets sub-parallel to bedding, few silty laminations, flame structures.                                                                                             |            |
| 69-70   |         | 193.73 | 195.1  | 1.37               | 1.03               | 194.1            | Sandstone               | as above with few thin coal bands and stringers                                                                                                                                                                                                                                                                                   |            |
|         |         | 195.1  | 195.5  | .40                | .33                |                  | Lost Core               |                                                                                                                                                                                                                                                                                                                                   |            |
| 70      |         | 195.5  | 196.55 | 1.05               | .90                |                  | Mudstone                | silty at top and base, slightly silty through the rest of the unit                                                                                                                                                                                                                                                                |            |
| 70      | 62°     | 196.55 | 196.95 | .40                | .35                |                  | Sandstone/<br>Siltstone | 3 cm (regular) interbeds, sandstone is very fine grained and faintly laminated, convoluted bedding, argillaceous throughout, particularly at base.                                                                                                                                                                                |            |
| 70      |         | 196.95 | 197.16 | .21                | .19                |                  | Sandstone               | fine grained, faintly laminated                                                                                                                                                                                                                                                                                                   |            |
| 70      |         | 197.16 | 197.55 | .39                | .34                | 197.2            | Sandstone/<br>Siltstone | as previously described, burrows, rootlets with 10 cm silty mudstone interbeds                                                                                                                                                                                                                                                    |            |
| 71      |         | 197.55 | 199.50 | 1.95               | 1.72               |                  | Mudstone/<br>Sandstone  | 2:1 mudstone to sandstone ratio, up to 20 cm sandstone interbeds, more argillaceous towards base, rare carbonaceous plant remains, broken in middle of unit, rare coal stringers and rootlets in sandstone portions, sandstone is laminated and silty, few polished surfaces in mudstone, sandstone is mottled in some interbeds. |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                         |            |
| 71      |         | 199.5-199.90  |    | .40                 | .36                 |                  | Mudstone               | silty at top, carbonaceous plant fragments and rare coal stringers in lower 2/3, very carbonaceous in 10 cm band in lower half, mottled very fine grained sandstone interbed (5 cm) at base.                                                                                            |            |
|         |         | 199.90-200.07 |    | .17                 | .15                 |                  | Lost Core              |                                                                                                                                                                                                                                                                                         |            |
| 71-72   |         | 200.07-200.60 |    | .53                 | .47                 | 200.3            | Mudstone               | silty throughout, sandy laminations in top 10 cm, carbonaceous plant remains and polished surfaces in lower half, up to 1 cm discontinuous bright coal bands near base.                                                                                                                 |            |
|         |         | 200.60-200.67 |    | .07                 | .06                 |                  | Lost Core              |                                                                                                                                                                                                                                                                                         |            |
| 72      |         | 200.67-200.9  |    | .23                 | .21                 | 200.9            | Mud                    | brownish grey, carbonaceous looking lumps of muddy clay, loss of circulation here?                                                                                                                                                                                                      |            |
|         |         | 200.9-201.03  |    | .13                 | .12                 |                  | Lost Core              | (Siltstone)                                                                                                                                                                                                                                                                             |            |
| 72      |         | 201.03-201.25 |    | .22                 | .20                 |                  | Siltstone              | muddy, micaceous, carbonaceous plant remains                                                                                                                                                                                                                                            |            |
| 72      | 65°     | 201.25-203.37 |    | 2.12                | 1.92                |                  | Sandstone              | fine to upper fine grained, silty interbeds in top half meter, becoming cleaner after that, faintly laminated, good stick, micaceous, mudstone interclasts 1 cm in diameter.                                                                                                            |            |
| 73      |         | 203.37-204.8  |    | 1.43                | 1.30                | 203.3            | Sandstone              | as above, calcite veining subparallel to bedding, abrupt lower contact with mudstone, slickensides, thin, bright coal bands at base, 2 cm chert pebble layer at base (discontinuous).                                                                                                   |            |
| 73      |         | 204.8-206.24  |    | 1.44                | 1.31                |                  | Mudstone/<br>Sandstone | about 2:1 mudstone to sandstone, very fine grained sandstone interbeds are up to 10 cm thick, mudstone has carbonaceous plant remains and thin, bright, discontinuous coal bands at top of unit, rare polished surfaces in mudstone, sandstones are mottled and contain a few rootlets. |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                       | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                       |            |
| 59      |         | 165.72 | 165.92 | .20                 | .18                 |                  | Coal                   | dull lustrous with bright bands, broken, some polished surfaces                                                                                       | VIT 20 ✓   |
| 59      |         | 165.92 | 166.04 | .12                 | .11                 |                  | Coal                   | bright banded, broken, sheared, wet                                                                                                                   |            |
|         |         | 166.04 | 166.09 | .05                 | .05                 |                  | LOST COAL              |                                                                                                                                                       |            |
| 59      |         | 166.09 | 166.2  | .11                 | .10                 |                  | Coal                   | dull with rare bright specks, highly powdered, wet                                                                                                    |            |
| 59      |         | 166.2  | 166.46 | .26                 | .24                 |                  | Mudstone               | carbonaceous with coal stringers, good stick, few calcite veinlets, numerous carbonaceous plant remains                                               |            |
| 59-60   |         | 166.46 | 167.16 | .70                 | .63                 | 166.7            | Mudstone               | becoming silty towards base, carbonaceous throughout with coal bands up to .05 cm thick, occasional polished surfaces and carbonaceous plant remains. |            |
|         |         | 167.16 | 167.22 | .06                 | .05                 |                  | LOST CORE              | (Coal?)                                                                                                                                               |            |
| 60      |         | 167.22 | 167.29 | .07                 | .06                 |                  | Coal                   | dull lustrous, muddy with bright bands at base                                                                                                        | VIT 21 ✓   |
| 60      |         | 167.29 | 168.34 | 1.05                | .95                 |                  | Siltstone              | argillaceous at top and base, polished surfaces, thin coal bands at top and base, good stick, tiny coal stringers throughout.                         |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                        | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                        |            |
| 76      |         | 212.25 | 212.49 | .24                | .21                |                  | Sandstone              | as above                                                                                                                                               |            |
| 76      |         | 212.49 | 214.27 | 1.78               | 1.56               | 212.5            | Mudstone               | becoming quite silty towards base, carbonaceous plant remains, few polished surfaces, broken in middle.                                                |            |
| 76-77   |         | 214.27 | 215.4  | 1.13               | .98                |                  | Siltstone              | some mottled sandy places, good stick core, micaceous, carbonaceous plant remains.                                                                     |            |
| 77      |         | 215.4  | 217.5  | 2.10               | 1.82               | 215.5            | Siltstone              | as above, grades downward into a dirty, very fine grained sandstone, coal stringers at base.                                                           |            |
| 77-78   |         | 217.5  | 218.46 | .96                | .82                |                  | Sandstone              | upper fine to lower medium grained, very clean and massive, few polished surfaces, joints at about 20° from core axis, few coaly stringers throughout. |            |
| 78-79   |         | 218.46 | 221.54 | 3.08               | 2.64               | 218.5            | Sandstone              | as above, one 2 cm chert pebble in middle, broken in middle                                                                                            |            |
|         |         | 221.54 | 221.67 | .13                | .11                |                  | Lost Core              | (Sandstone)                                                                                                                                            |            |
| 79-80   |         | 221.67 | 224.2  | 2.53               | 2.15               | 221.5            | Sandstone              | as above, good stick, abrupt lower contact, micaceous specks, hard, pyrite crystals on joint surfaces.                                                 |            |
| 80      |         | 224.2  | 224.5  | .30                | .25                |                  | Mudstone               | polished surfaces, broken into 1 cm thick pieces                                                                                                       |            |
|         |         | 224.5  | 224.65 | .15                | .13                |                  | LOST CORE              |                                                                                                                                                        |            |
| 80      |         | 224.65 | 224.71 | .06                | .05                |                  | Coaly Mudstone         | with carbonaceous plant remains and bright, discontinuous coal bands.                                                                                  |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                |            |
| 74      | 66°     | 206.24 | 207.52 | 1.28               | 1.17               | 206.4            | Mudstone/Sandstone     | as above with 40 cm of sand with siltstone interlamina-tions at base                                                           | VIT 28 ✓   |
|         |         | 207.52 | 207.83 | .31                | .28                |                  | Lost Core              |                                                                                                                                |            |
| 74      |         | 207.83 | 209.24 | 1.41               | 1.27               |                  | Mudstone               | carbonaceous plant remains and coal stringers, silty in places, becoming more carbonaceous and coaly in last 5 cm.             |            |
| 74      |         | 209.24 | 209.29 | .05                | .05                |                  | Coaly Mudstone         | polished surfaces, highly broken                                                                                               |            |
| 74      |         | 209.29 | 209.35 | .06                | .05                |                  | Coal                   | dull lustrous banded                                                                                                           |            |
| 74      |         | 209.35 | 209.48 | .13                | .12                |                  | Carbonaceous Mudstone  | with thin bright coal bands, very silty at base                                                                                |            |
| 75      |         | 209.48 | 209.63 | .15                | .14                | 209.5            | Siltstone/Sandstone    | mottled, few mudstone interclasts, coaly rootlets, sandstone is very fine grained.                                             |            |
| 75      |         | 209.63 | 209.73 | .10                | .09                |                  | Siltstone/Standstone   | as above with 2 discontinuous 2 cm bright, cleated coal bands                                                                  |            |
| 75      |         | 209.73 | 211.71 | 1.98               | 1.76               |                  | Mudstone               | carbonaceous, grading into siltstone and very fine grained sandstone at base, rare polished surfaces, bedding is not apparent. |            |
| 75      | 62°     | 211.71 | 212.25 | .54                | .48                |                  | Sandstone              | very fine grained, dirty looking, faintly laminated, mostly mottled                                                            |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                    | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                    |            |
| 80      |         | 224.71 | 224.75 | .04                | .03                | 224.6            | Coaly Mudstone         | as above                                                                                           |            |
| 80      |         | 224.75 | 225.03 | .28                | .23                |                  | Carbonaceous Mudstone  | with carbonaceous plant remains and thin, bright coal stringers                                    |            |
| 80      |         | 225.03 | 225.55 | .52                | .44                |                  | Mudstone               | with carbonaceous plant remains and rare coal stringers                                            |            |
| 80      |         | 225.55 | 225.94 | .39                | .33                |                  | Carbonaceous Mudstone  | with carbonaceous plant remains and numerous polished surfaces                                     |            |
| 80      |         | 225.94 | 226.04 | .10                | .08                |                  | Coaly Mudstone         | with thin bright coal bands                                                                        |            |
| 80      |         | 226.04 | 226.27 | .23                | .19                |                  | Carbonaceous Mudstone  | as previously described with thin, bright coal bands near top of unit                              |            |
| 81      |         | 226.27 | 226.62 | .35                | .29                |                  | Mudstone               | with carbonaceous plant remains                                                                    |            |
| 81      |         | 226.62 | 226.74 | .12                | .10                |                  | Carbonaceous Mudstone  | with carbonaceous plant remains, up to 1 cm bright, discontinuous coal bands and polished surfaces |            |
| 81      |         | 226.74 | 227.45 | .71                | .59                |                  | Siltstone              | muddy at top, long coal stringer in middle of unit, rare carbonaceous plant remains.               |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                           |            |
| 81      |         | 227.45 | 227.65 | .20                 | .16                 | 227.6            | Siltstone                | becoming sandy towards base, rare carbonaceous plant remains                                                                                                                                                                                              |            |
| 81      | 55°     | 227.65 | 228.72 | 1.70                | .88                 |                  | Sandstone/<br>Mudstone   | faintly laminated, mudstone is one 15 cm interbed in center of unit, very thin, wispy coal stringers in middle, 2 cm mudstone interbeds throughout, polished carbonaceous surfaces in sandstone, sandstone is fine grained, micaceous specks in sandstone |            |
| 81-82   |         | 228.72 | 229.2  | .48                 | .39                 |                  | Mudstone                 | with carbonaceous plant fragments and small coal stringers                                                                                                                                                                                                |            |
| 82      |         | 229.2  | 229.60 | .40                 | .33                 |                  | Carbonaceous<br>Mudstone | with carbonaceous plant remains and thin, discontinuous coal bands, few pyrite nodules.                                                                                                                                                                   |            |
| 82      |         | 229.60 | 229.92 | .32                 | .27                 |                  |                          | Lost Core                                                                                                                                                                                                                                                 |            |
| 82      |         | 229.92 | 230.0  | .08                 | .07                 |                  | Mudstone                 | carbonaceous plant remains, grading to siltstone at base                                                                                                                                                                                                  |            |
| 82      |         | 230.0  | 230.65 | .65                 | .54                 |                  | Siltstone                | micaceous, carbonaceous plant remains (rare)                                                                                                                                                                                                              |            |
| 82      |         | 230.65 | 230.75 | .10                 | .08                 | 230.7            | Siltstone                | as above                                                                                                                                                                                                                                                  |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                                              | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                              |            |
| 82      |         | 230.75 | 231.88 | 1.13                | .94                 |                  | Silty Mudstone           | faintly laminated, few very fine grained sandstone interbeds up to 4 cm thick, carbonaceous plant remains.                                                                                   |            |
| 82-83   | 57°     | 231.88 | 232.88 | 1.00                | .84                 |                  | Sandstone                | very fine grained with mudstone interlaminations, becoming muddier towards base, rootlets, few carbonaceous plant remains in muddy parts.                                                    |            |
| 83      |         | 232.88 | 233.74 | .86                 | .72                 | 233.8            | Mudstone<br>MARKER BLOCK | silty towards base, coal stringers, rare polished surfaces<br>maybe in wrong place due to porcupine                                                                                          |            |
|         |         | 233.74 | 233.82 | .08                 | .07                 |                  | Lost Core                |                                                                                                                                                                                              |            |
| 83      |         | 233.82 | 234.42 | .60                 | .50                 |                  | Silty Mudstone           | grades to sandstone at base, featureless                                                                                                                                                     |            |
| 83-84   | 55°     | 234.42 | 235.5  | 1.08                | .88                 |                  | Sandstone                | fine grained, a few muddy interbeds near top, faintly laminated, becoming massive at base, abrupt lower contact with mudstone, few burrows, cross-laminated, few carbonaceous plant remains. |            |
| 84      |         | 235.5  | 236.0  | .50                 | .41                 |                  | Mudstone                 | few coal stringers, carbonaceous in places, silty in middle, polished surfaces, calcite on polished surfaces.                                                                                |            |
| 84      |         | 236.0  | 236.09 | .09                 | .08                 |                  | Carbonaceous<br>Mudstone | with thin, discontinuous, bright coal bands, polished surfaces, broken                                                                                                                       |            |



| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                             | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                             |            |
| 84      |         | 236.09 | 236.44 | .35                 | .30                 |                  | Mudstone               | grading to siltstone towards base, carbonaceous plant remains                                               |            |
| 84      |         | 236.44 | 236.82 | .38                 | .33                 |                  | Siltstone              | muddy, micaceous, carbonaceous plant remains at top of unit                                                 |            |
| 84      |         | 236.82 | 236.87 | .05                 | .04                 | 236.8            | Mudstone               | abrupt lower contact with sandstone                                                                         |            |
| 84      | 61°     | 236.87 | 237.07 | .20                 | .17                 |                  | Sandstone              | fine grained, laminated, micaceous, abrupt lower contact with mudstone                                      |            |
|         |         | 237.07 | 237.81 | .74                 | .65                 |                  | Mudstone               | faint sandy laminations in top 10 cm, micaceous and silty at the top                                        |            |
| 85      |         | 237.81 | 237.91 | .10                 | .09                 |                  | Carbonaceous Mudstone  | polished surfaces, minor calcite on polished surfaces, thin discontinuous bright coal bands                 |            |
| 85      |         | 237.91 | 238.52 | .61                 | .54                 |                  | Sandstone              | very fine grained, faintly laminated, rare thin bright coal bands, silty at top                             |            |
| 85      |         | 238.52 | 238.57 | .05                 | .04                 |                  | Carbonaceous Mudstone  | thin slicked coal bands                                                                                     |            |
| 85      |         | 238.57 | 238.75 | .18                 | .16                 | 238.7            | Mudstone               | few carbonaceous plant remains, gradational lower contact with sandstone                                    |            |
| 85      |         | 238.75 | 239.10 | .35                 | .31                 |                  | Sandstone              | very fine grained, disturbed bedding, rootlets, muddy laminations, abrupt lower contact with mudstone below |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                |            |
| 85      |         | 239.10 | 239.56 | .46                | .41                |                  | Mudstone               | carbonaceous with thin coal lenses at top, silty in middle                                                                                                                     |            |
| 85      |         | 239.56 | 240.6  | 1.04               | .94                | 239.9            | Mudstone               | silty and sandy in places, core is grooved from vibrating bit                                                                                                                  |            |
| 86      | 66°     | 240.6  | 241.26 | .66                | .60                |                  | Sandstone              | very fine grained, faint laminations, rootlets, grades to siltstone at base, rare carbonaceous plant remains.                                                                  |            |
|         |         | 241.26 | 242.68 | 1.42               | 1.32               |                  | Siltstone              | sandy interbeds up to 5 cm thick at base, carbonaceous plant remains at top of unit, worm burrows, lenticular bedding.                                                         |            |
| 86      |         | 242.68 | 243.04 | .36                | .33                | 242.9            | Siltstone              | as above, gradational contact with sandstone below, argillaceous                                                                                                               |            |
| 86-87   | 70°     | 243.04 | 243.77 | .73                | .69                |                  | Sandstone/<br>Mudstone | interlaminations of sandstone, siltstone and mudstone, rootlets and carbonaceous plants fragments, bioturbation at base, abrupt lower contact, sandstone is very fine grained. |            |
| 87      |         | 243.77 | 245.75 | 1.98               | 1.87               |                  | Silty Mudstone         | carbonaceous plant remains, core is broken at base, muddier at base                                                                                                            |            |
|         |         | 245.75 | 245.80 | .05                | .05                |                  | LOST CORE              |                                                                                                                                                                                |            |
| 87-88   |         | 245.80 | 246.65 | .85                | .80                | 246.0            | Mudstone               | siltier at base, discontinuous coal bands, rare polished surfaces, small carbonaceous plant remains.                                                                           |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                       | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                       |            |
| 88      | 72°     | 246.65 | 248.04 | 1.39               | 1.32               |                  | Sandstone              | very fine grained to fine grained, very dirty with mudstone and silty laminations in bottom half, interbeds of mudstone up to 3 cm, coal stringers, micaceous, good stick core, rootlets and very minor bioturbation. |            |
| 88-89   | 65°     | 248.04 | 248.92 | .88                | .80                |                  | Siltstone              | with argillaceous laminations, rare carbonaceous plant fragments at base                                                                                                                                              |            |
| 89      |         | 248.92 | 251.0  | 2.08               | 1.85               | 249.0            | Mudstone               | pyrite nodules, broken in middle, grades to sandstone at base, carbonaceous plant fragments, and rare coal stringers in places                                                                                        |            |
| 89-90   | 61°     | 251.0  | 251.95 | .95                | .83                |                  | Sandstone              | very fine grained, laminated at base, bioturbated at top, numerous rootlets in top half of unit, mudstone laminations in lower half, good stick core.                                                                 |            |
| 90      | 60°     | 251.95 | 252.55 | .60                | .52                | 251.0            | Mudstone               | grades to sandstone at base, silty laminations, carbonaceous plant remains, sometimes are coalified.                                                                                                                  |            |
| 90      | 65°     | 252.55 | 254.2  | 1.65               | 1.50               |                  | Sandstone              | very fine grained, faintly laminated, bioturbated at top, rare carbonaceous plant remains, rootlets and worm burrows.                                                                                                 |            |
| 90      |         | 254.2  | 254.41 | .21                | .19                |                  | Mudstone               | slightly silty                                                                                                                                                                                                        |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                     | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                     |            |
| 91      |         | 254.41 | 255.08 | .67                | .61                |                  | Sandstone              | very fine grained, carbonaceous plant fragments, polished surfaces,                                                                                                                                                 |            |
| 91      |         | 255.08 | 256.68 | 1.60               | 1.45               | 255.1            | Sandstone              | as above, with 3-5 cm mudstone interbeds, mudstones are carbonaceous with coal stringers, silty towards the base of the unit, breaks on polished and slickensided surfaces, faint laminations, bioturbated at base. |            |
| 91-92   | 65°     | 256.68 | 257.44 | .76                | .69                |                  | Siltstone              | has abundant sandstone and mudstone (10 cm) interbeds and interlaminations, carbonaceous plant remains, mudstone has coaly stringers, slickensides, rootlets, minor scour surfaces and soft sediment deformation.   |            |
| 92      |         | 257.44 | 258.06 | .62                | .57                |                  | Sandstone              | very fine grained, faint laminations, carbonaceous plant fragments, good stick                                                                                                                                      |            |
| 92      | 70°     | 258.06 | 258.37 | .31                | .29                | 258.2            | Siltstone              | interlaminated with mudstone, carbonaceous plant fragments, ironstone concretions up to 2 cm in thickness, abrupt basal contact with sandstone                                                                      |            |
| 92-93   |         | 258.37 | 259.82 | 1.45               | 1.37               |                  | Sandstone              | very fine grained, well laminated, slickensides, calcite veins, carbonaceous plant fragments on dark laminations, good stick at top, broken at base (in last 28 cm) with abundant calcite veining and slickensides. |            |
|         |         | 259.82 | 259.96 | .14                | .13                |                  | LOST MUDSTONE CORE     |                                                                                                                                                                                                                     |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                            | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                            |            |
| 93      |         | 259.96 | 260.94 | .98                | .94                |                  | Mudstone               | heavily broken to next marker block, silt and sandstone laminations at top, abundant slickensides, calcite veins, heavily broken near base, polished carbonaceous surfaces, slickensided calcite surfaces. |            |
| 93      |         | 260.94 | 261.53 | .59                | .57                | 261.2            | Mudstone               | calcite veining and slickensides continue, but core is not as badly broken, sharp basal contact.                                                                                                           |            |
| 93      | 75°     | 261.53 | 262.23 | .70                | .68                |                  | Sandstone              | very fine grained, silty and argillaceous laminations, rootlets, some facturing perpendicular to bedding, some slickensides, sharp contact with siltstone at base                                          |            |
| 93-94   | 73°     | 262.23 | 262.63 | .40                | .38                |                  | Siltstone              | faint sandy laminations, rootlets                                                                                                                                                                          |            |
| 94      |         | 262.63 | 263.32 | .69                | .65                |                  | Mudstone               | dark grey, carbonaceous plant fragments (abundant), coal stringers                                                                                                                                         |            |
| 94      |         | 263.32 | 263.4  | .08                | .07                |                  | Carbonaceous Mudstone  | with coal stringers and polished surfaces                                                                                                                                                                  |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                  | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                  |            |
| 94      |         | 263.40 | 263.95 | .55                 | .51                 |                  | Coal                   | hard, dull lustrous with a few thin bright bands, powdered and sheared in places, 15 cm up from base is a dull and bright band (4 cm thick), base is powdered and sheared.                                                                                                       | VIT 29 ✓   |
|         |         | 263.95 | 264.06 | .11                 | .10                 |                  | Lost Coal              |                                                                                                                                                                                                                                                                                  |            |
| 94      |         | 264.06 | 264.11 | .05                 | .05                 |                  | Carbonaceous Mudstone  | slickensided, few thin bright coal stringers                                                                                                                                                                                                                                     |            |
|         |         | 264.11 | 264.34 | .23                 | .21                 |                  | Lost Core              | (carbonaceous mudstone) probably after next marker block                                                                                                                                                                                                                         |            |
| 94      |         | 264.34 | 264.47 | .13                 | .12                 | 264.2            | Carbonaceous Mudstone  | very broken at top, polished surfaces, abundant slickensides and coaly stringers.                                                                                                                                                                                                |            |
|         |         | 264.47 | 264.54 | .07                 | .06                 |                  | Lost Core              | (carbonaceous mudstone)                                                                                                                                                                                                                                                          |            |
| 94-95   |         | 264.54 | 265.87 | 1.33                | 1.22                |                  | Mudstone               | very carbonaceous (plant remains), heavily slickensided and broken at 80 cm from top (very carbonaceous here), 10 cm silty band in middle of unit, grades into carbonaceous mudstone in basal 30 cm (also numerous coaly stringers at base), sharp basal contact with sandstone. |            |
| 95      | 65°     | 265.87 | 267.1  | 1.23                | 1.11                |                  | Sandstone              | very fine grained, faint laminations, carbonaceous plant fragments, small coal pod near middle.                                                                                                                                                                                  |            |
| 95      |         | 267.10 | 268.20 | 1.10                | .98                 | 267.2            | Siltstone              | sandy and muddy in places (interlaminations), concretionary layer in middle of unit (10 cm thick), carbonaceous plant fragments.                                                                                                                                                 |            |
| 96      | 60°     | 268.20 | 270.16 | 1.96                | 1.70                |                  | Sandstone              | very fine grained, faintly laminated, silty and argillaceous in places, large coalified rootlet in center of unit, wispy calcite veinlets sub-parallel to bedding, polished and slickensided surfaces.                                                                           |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                            | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                            |            |
| 96-97   | 58°     | 270.16 | 273.2  | 3.04               | 2.58               | 270.3            | Sandstone              | as above, laminations have become more apparent, numerous rootlets, slickensided carbonaceous surfaces.                                                                                    | VIT 30 ✓   |
| 97-98   | 45°     | 273.2  | 276.27 | 3.07               | 2.17               | 273.4            | Sandstone              | as above, more siltstone interbeds, becoming increasingly bioturbated, rootlets, few carbonaceous plant remains, some calcite veining sub-parallel to bedding, 5 cm mudstone band at base. |            |
| 98-99   | 51°     | 276.27 | 276.8  | .53                | .41                | 276.0            | Sandstone              | upper fine to lower medium grained, much cleaner, faintly laminated, broken in places, few carbonaceous laminations, few fractures perpendicular to bedding.                               |            |
| 99      |         | 276.8  | 276.92 | .12                | .09                |                  | Carbonaceous Mudstone  | polished surfaces, coal stringers, highly broken at base                                                                                                                                   |            |
| 99      |         | 276.92 | 276.95 | .03                | .02                |                  | Coal                   | powdered, mostly dull with bright specks                                                                                                                                                   |            |
|         |         | 276.95 | 277.3  | .35                | .28                |                  | Lost Coal              |                                                                                                                                                                                            |            |
|         |         | 277.3  | 277.78 | .48                | .40                |                  | Lost Mudstone          |                                                                                                                                                                                            |            |
| 99      |         | 277.78 | 278.0  | .22                | .18                |                  | Mudstone               | grades to sandstone at base, broken and powdered in places, numerous carbonaceous plant remains, polished surfaces, few bright coal stringers.                                             |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                        | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                        |            |
| 99      |         | 278.0  | 278.34 | .34                 | .29                 |                  | Sandstone              | very fine grained, massive, core is gouged by drill, very hard, coaly plant remains.                                                                                                                                   |            |
| 99-100  | 60°     | 278.34 | 280.27 | 1.93                | 1.67                | 278.9            | Sandstone              | very fine grained, faintly laminated, siltstone interbeds and interlamination, polished carbonaceous surfaces, broken in places, calcite veining (slicken-sided) parallel to bedding, rare carbonaceous plant remains. |            |
| 100     |         | 280.27 | 280.85 | .58                 | .50                 |                  | Mudstone               | carbonaceous plant remains increasing towards base, slightly silty at top, coal stringers and discontinuous bright coal bands.                                                                                         |            |
| 100     |         | 280.85 | 281.08 | .23                 | .20                 |                  | Carbonaceous Mudstone  | carbonaceous plant remains, polished surfaces, thin discontinuous bright coal bands throughout, broken in middle.                                                                                                      |            |
|         |         | 281.08 | 281.15 | .07                 | .06                 |                  | Lost Core              | (carbonaceous mudstone)                                                                                                                                                                                                |            |
| 100     |         | 281.15 | 281.52 | .37                 | .32                 |                  | Mudstone               | as previously described, except becoming silty towards base and is not coaly                                                                                                                                           |            |
| 100     |         | 281.52 | 281.98 | .46                 | .39                 |                  | Sandstone              | lower to upper fine grained, numerous rootlets at top, faintly laminated in lower half, few carbonaceous plant fragments.                                                                                              |            |
| 100     | 54°     | 281.98 | 282.15 | .17                 | .14                 | 281.9            | Sandstone              | as above, laminated, becoming muddy at base                                                                                                                                                                            |            |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                           |            |
| 100     |         | 282.15 | 282.27 | .12                | .10                |                  | Carbonaceous Mudstone  | numerous discontinuous, bright coal bands, polished surfaces, very broken and quite coaly in top few centimeters.                                                                                                                         |            |
| 100     |         | 282.27 | 282.35 | .08                | .07                |                  | Mudstone               | carbonaceous plant remains, discontinuous coal bands, very slightly silty                                                                                                                                                                 |            |
| 101     |         | 282.35 | 282.85 | .50                | .41                |                  | Mudstone               | as above, becoming more silty towards base, slickensides                                                                                                                                                                                  |            |
| 101     | 55°     | 282.85 | 284.10 | 1.25               | 1.02               |                  | Sandstone              | becoming more laminated (carbonaceous laminae) towards base, rootlets, carbonaceous plant remains, fractures perpendicular to bedding, few coalified plant remains, sandstone coarsens from very fine to upper fine grained towards base. |            |
| 101     |         | 284.10 | 284.22 | .12                | .10                |                  | Mudstone               | silty                                                                                                                                                                                                                                     |            |
| 101     |         | 284.22 | 284.32 | .10                | .08                |                  | Carbonaceous Mudstone  | thin coal stringers and discontinuous coal bands (up to 1 cm thick), carbonaceous plant remains, polished surfaces, powdered 1 cm coal band at base.                                                                                      |            |
|         |         | 284.32 | 284.58 | .26                | .22                |                  | Lost Core              | (Mudstone)                                                                                                                                                                                                                                |            |
| 101     |         | 284.58 | 285.26 | .68                | .58                |                  | Mudstone               | very carbonaceous at top, carbonaceous plant remains throughout, coal stringers, faint siltstone laminations at base, coal stringers more abundant at top.                                                                                |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                        | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                        |            |
| 101     |         |               |    |                     |                     | 284.9            |                        |                                                                                                                                                                                                                                                        |            |
| 102     |         | 285.26-285.4  |    | .14                 | .12                 |                  | Mudstone               | as above                                                                                                                                                                                                                                               |            |
|         |         | 285.4-285.8   |    | .40                 | .35                 |                  | Lost Core              | (mudstone)                                                                                                                                                                                                                                             |            |
| 102-103 | 60°     | 285.8-288.82  |    | 3.02                | 2.62                |                  | Sandstone              | very fine grained, argillaceous at top, bioturbated at top, becoming more laminated towards base, large coalified rootlets in top 30 cm, rootlets throughout, carbonaceous plant remains, siltstone laminations becoming more abundant toward base.    |            |
| 103     |         | 288.82-289.22 |    | .40                 | .34                 | 288.4            | Siltstone              | argillaceous                                                                                                                                                                                                                                           |            |
| 103     | 56°     | 289.22-290.3  |    | 1.08                | .90                 |                  | Mudstone               | silty at top, few 3 cm fine grained sandstone interbeds in top 40 cm of unit, mudstone has carbonaceous plant remains, few calcite veinlets parallel to bedding, polished surfaces, (large) coalified plant remains at 59 cm from top in a 10 cm band. |            |
|         |         | 290.3-290.37  |    | .07                 | .06                 |                  | Lost Core              | (sandstone)                                                                                                                                                                                                                                            |            |
| 103-104 | 53°     | 290.37-291.6  |    | 1.23                | .98                 |                  | Sandstone              | fine to upper fine grained, faintly laminated, few carbonaceous laminae, dirty at top, clean in lower 4/5, bioturbated at top, abrupt lower contact.                                                                                                   |            |
| 104     |         | 291.6-291.76  |    | .16                 | .13                 |                  | Mudstone               | with carbonaceous plant remains and thin coal stringers                                                                                                                                                                                                |            |
| 104     |         | 291.76-294.02 |    | 2.26                | 2.00                | 291.0            | Mudstone               | as above, polished surfaces, slightly silty in places, wispy calcite veinlets parallel to bedding.                                                                                                                                                     |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                         |            |
| 105     | 66°     | 294.02 | 294.72 | .70                 | .64                 |                  | Sandstone              | as previously described, abrupt lower contact with mudstone, coarsens to lower medium grained at base.                                                                                                                                                                                                                                  |            |
| 105     |         | 294.72 | 294.82 | .10                 | .09                 |                  | Mudstone               | broken at base, polished surfaces                                                                                                                                                                                                                                                                                                       |            |
|         |         | 294.82 | 294.88 | .06                 | .05                 |                  | Lost Core              | (Mudstone)                                                                                                                                                                                                                                                                                                                              |            |
| 105     | 62°     | 294.88 | 295.02 | .14                 | .12                 | 294.0            | Mudstone               | as above with carbonaceous plant remains, polished surfaces                                                                                                                                                                                                                                                                             |            |
| 105     |         | 295.02 | 296.74 | 1.72                | 1.52                |                  | Sandstone              | very fine grained, highly rooted at top, dirty, becomes more laminated towards base, 30 cm mudstone interbed (as above) in center, calcite veins up to 1/2 cm parallel to bedding, fairly good stick, mudstone interbed is broken in places, micaceous, rare coaly plant remains, calcite vein at base has a few quartz crystals in it. |            |
| 106     |         | 296.74 | 296.9  | .16                 | .14                 |                  | Sandstone              | very fine grained with argillaceous interlaminar, rootlets, abrupt lower contact, carbonaceous plant remains.                                                                                                                                                                                                                           |            |
| 106     | 63°     | 296.9  | 297.78 | .88                 | .77                 |                  | Siltstone              | 10 cm of mudstone grading downward to siltstone at top of unit, core is very grooved, few coal stringers and carbonaceous plant remains.                                                                                                                                                                                                |            |
|         |         | 297.78 | 297.87 | .09                 | .08                 |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                                         |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                              | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                              |            |
| 106     | 57°     | 297.87-298.40 |    | .53                | .44                | 297.8            | Sandstone              | very fine grained, laminated with siltstone, numerous rootlets, carbonaceous plant remains.                                                                                                                  |            |
| 106     |         | 298.40-298.45 |    | .05                | .04                |                  | Mudstone               | silty, numerous wispy calcite veinlets, few very thin coal stringers                                                                                                                                         |            |
| 106     |         | 298.45-298.54 |    | .09                | .08                |                  | Mudstone               | as above, more carbonaceous, very broken, thin discontinuous coal bands, sheared and polished surfaces.                                                                                                      |            |
|         |         | 298.54-298.70 |    | .16                | .14                |                  | Lost Core              | (mudstone)                                                                                                                                                                                                   |            |
| 106     |         | 298.70-299.20 |    | .50                | .44                |                  | Mudstone               | as above but is not broken, thin calcite vein near base, polished surfaces                                                                                                                                   |            |
| 106-107 | 64°     | 299.20-299.99 |    | .79                | .71                |                  | Sandstone              | argillaceous with coal stringers in top 10 cm, faintly laminated at base, 3 cm mudstone interbed, sandstone is cleanest in lower 13 cm, abrupt lower contact, few rootlets, rare carbonaceous plant remains. |            |
| 107     | 52°     | 299.99-300.98 |    | .99                | .78                |                  | Siltstone              | with very fine grained sandstone interbeds and interlaminations, cross-laminated, joint perpendicular to bedding, soft sediment deformation, rare carbonaceous plant remains.                                |            |
| 107     | 53°     | 300.98-301.74 |    | .76                | .61                | 300.8            | Siltstone              | as above, ratio of sandstone interbeds increases towards base, abrupt lower contact, very carbonaceous in lower 5 cm, coarsens to lower medium grained sandstone at base.                                    |            |
| 107     |         | 301.74-302.11 |    | .37                | .30                |                  | Carbonaceous Mudstone  | with discontinuous bright coal bands, polished surfaces, calcite veinlets parallel to bedding, silty interbed (5 cm) in middle of unit.                                                                      |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                    | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                    |            |
| 108     |         | 302.11 | 302.22 | .11                | .09                |                  | Coal                   | broken and powdered, dull, few bright bands                                                                                                                                        | VIT 31 ✓   |
| 108     |         | 302.22 | 302.27 | .05                | .04                |                  | Coaly Mudstone         | with bright coal bands                                                                                                                                                             |            |
| 108     |         | 302.27 | 302.50 | .23                | .19                |                  | Mudstone               | highly broken, carbonaceous plant remains, sheared and polished surfaces, few bright coal bands.                                                                                   |            |
| 108     |         | 302.50 | 302.64 | .14                | .11                |                  | Coal                   | dull lustrous banded, broken                                                                                                                                                       | VIT 32 ✓   |
|         |         | 302.64 | 302.73 | .09                | .07                |                  | Lost Coal              |                                                                                                                                                                                    |            |
| 108     |         | 302.73 | 302.80 | .07                | .06                |                  | Coal                   | bright banded, broken, powdered                                                                                                                                                    |            |
| 108     |         | 302.80 | 303.80 | 1.00               | .82                |                  | Mudstone               | becoming quite silty towards base, bright coal stringers at top, polished surfaces, carbonaceous plant remains.                                                                    |            |
| 108     | 55°     | 303.80 | 303.97 | .17                | .14                | 303.9            | Sandstone              | laminated, mudstone interlaminae, rootlets, disseminated pyrite lenses, polished and calcite coated coal band (.5 cm) at base, carbonaceous plant remains                          |            |
| 108     | 57°     | 303.97 | 304.77 | .80                | .67                |                  | Siltstone              | quite argillaceous at top, carbonaceous plant remains, very fine grained sandstone interbeds increasing towards base, some mudstone interlamination, rootlets, few coal stringers. |            |
| 109     | 50°     | 304.77 | 306.0  | 1.23               | .94                |                  | Sandstone              | very fine grained, silty laminations, numerous rootlets, grading to silty mudstone at base, soft sediment deformation, few carbonaceous plant remains, few polished surfaces.      |            |
| 109     |         | 306.0  | 306.13 | .13                | .11                |                  | Mudstone               | silty at base, thin coal bands and polished surfaces at top, numerous carbonaceous plant remains.                                                                                  |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                          | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                          |            |
| 109     | 63°     | 306.13-306.76 |    | .63                 | .56                 |                  | Sandstone              | very fine grained, laminated, top 20 cm is silt-size, good stick, carbonaceous plant remains, polished surfaces at top, few rootlets, 2 cm siltstone interbeds           |            |
|         |         | 306.76-306.89 |    | .13                 | .12                 |                  | Lost Core              | (sandstone)                                                                                                                                                              |            |
| 109-110 |         | 306.89-307.70 |    | .81                 | .73                 | 306.9            | Sandstone              | as above, grades to mudstone at base<br><br>NOTE: marker block interval-extreme core loss                                                                                |            |
| 110     | 66°     | 307.7-307.97  |    | .27                 | .24                 |                  | Mudstone               | grades to siltstone at base, very carbonaceous, polished surfaces, 1 cm coal band at top, large polished plant imprints, wispy calcite veinlets parallel to bedding.     |            |
|         |         | 307.97-308.55 |    | .58                 | .53                 |                  | Lost Core              | (siltstone)                                                                                                                                                              |            |
| 110     |         | 308.55-309.7  |    | 1.15                | 1.05                |                  | Siltstone              | argillaceous at top, very fine grained laminated sandstone interbeds up to 20 cm, bioturbated in middle, few carbonaceous plant remains, few rootlets, flame structures. |            |
|         |         | 309.7-309.87  |    | .17                 | .15                 |                  | Lost Core              | (sandstone)                                                                                                                                                              |            |
| 110     |         | 309.87-310.0  |    | .13                 | .11                 | 310.0            | Sandstone              | as above, abrupt lower contact with mudstone, disseminated pyrite lens at base.                                                                                          |            |
| 110     |         | 310.0-310.44  |    | .44                 | .37                 |                  | Mudstone               | 2 cm bright coal band at top, polished surfaces, slightly silty, dark grey color, coal stringers (roots?) throughout.                                                    |            |
| 111     |         | 310.44-311.01 |    | .57                 | .47                 |                  | Mudstone               | as above, grades to sandstone at base, large discontinuous coal roots through-out.                                                                                       |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                                   |                                                                                                                                                                                                                                               | Sample No.      |
|---------|---------|--------|--------|---------------------|---------------------|------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|         |         | From   | To     |                     |                     |                  | MAIN                                                                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                               |                 |
| 111     | 52°     | 311.01 | 311.80 | .79                 | .62                 |                  | Sandstone                                                                | very fine grained, siltstone interbeds up to 5 cm thick, grades to argillaceous siltstone at base, some sandy beds have sharp contacts with muddy silts, root-lets, flame structures, faintly laminated, carbonaceous and coaly plant remains | GSC<br>VIT 33 ✓ |
| 111     | 63°     | 311.80 | 312.50 | .70                 | .62                 |                  | Siltstone                                                                | argillaceous, faint interbeds of silty mudstone, disseminated pyrite lens parallel to bedding, polished surfaces, coal stringers, carbonaceous plant remains.                                                                                 |                 |
|         |         | 312.5  | 312.70 | .20                 | .18                 |                  | Coal                                                                     | dull banded, highly sheared and powdered at top, broken at base.                                                                                                                                                                              |                 |
|         |         | 312.70 | 312.90 | .20                 | .18                 |                  | Lost Coal                                                                |                                                                                                                                                                                                                                               |                 |
|         |         | 312.90 | 312.98 | .08                 | .07                 |                  | Carbonaceous Mudstone                                                    | thin coal stringers, polished surfaces, numerous carbonaceous plant fragments.                                                                                                                                                                |                 |
|         |         | 312.98 | 313.01 | .03                 | .03                 |                  | Lost Core                                                                | (carbonaceous mudstone)                                                                                                                                                                                                                       |                 |
|         | 313.01  | 313.38 | .37    | .33                 |                     | Mudstone         | polished surfaces, discontinuous coal bands, carbonaceous plant remains. |                                                                                                                                                                                                                                               |                 |
| 112     | 65°     | 313.38 | 315.50 | 2.12                | 1.92                |                  | Sandstone                                                                | fine grained, siltstone interbeds up to 25 cm, faint laminations, grades to mudstone at base, sparse carbonaceous plant remains, polished carbonaceous bedding plane with pyrite and calcite.                                                 |                 |
|         |         | 315.50 | 316.02 | .52                 | .47                 |                  | Mudstone                                                                 | silty in places, polished surfaces, carbonaceous plant remains, coal stringers, wispy calcite veinlets, disseminated pyrite lenses.                                                                                                           |                 |
| 112-113 |         | 316.02 | 316.71 | .69                 | .63                 | 316.9            | Mudstone                                                                 | as above, grades to siltstone at base, broken in middle, numerous coal stringers and bands up to 2 cm thick in middle.                                                                                                                        |                 |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                  | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                  |            |
| 113     |         | 316.71 | 317.38 | .67                 | .58                 |                  | Siltstone              | grades to fine grained sandstone, with very fine grained sandstone interlamina-tions throughout, carbonaceous plant remains.                                                                     |            |
| 113     | 55°     | 317.38 | 318.21 | .83                 | .68                 |                  | Sandstone              | very fine to fine grained, 10 cm band of clean upper fine grained sandstone near base, rootlets, faintly laminated, siltstone interbeds, grades to mudstone at base, carbonaceous plant remains. |            |
| 113-114 |         | 318.21 | 318.85 | .64                 | .54                 | 319.1            | Mudstone               | carbonaceous plant fragments, powdered coal band in middle, wispy calcite veinlets, calcite veinlets parallel to bedding.                                                                        |            |
| 114     |         | 318.85 | 319.33 | .48                 | .41                 |                  | Silty Mudstone         | carbonaceous plant remains, few polished surfaces                                                                                                                                                |            |
| 114     | 61°     | 319.33 | 320.32 | .99                 | .87                 |                  | Sandstone              | with siltstone interlamina-tions, sandstone is very fine to upper fine grained, rootlets, convoluted bedding.                                                                                    |            |
| 114     |         | 320.32 | 320.65 | .33                 | .29                 |                  | Silty Mudstone         | grades to carbonaceous mudstone at the base, polished surfaces, soft sediment deformation, numerous carbonaceous plant remains at base.                                                          |            |
| 114     |         | 320.65 | 321.02 | .37                 | .32                 |                  | Carbonaceous Mudstone  | with coal bands (.5 cm) and coal stringers throughout, breaks into sheared platelets, pyrite blebs, polished surfaces, abrupt lower contact with sandstone.                                      |            |
| 114-115 |         | 321.02 | 321.81 | .79                 | .68                 |                  | Sandstone              | upper fine to lower medium grained, faintly laminated, mudstone interclasts up to 1 cm in length, .5 cm coal band in middle, coal stringers, abrupt contact at base with mudstone.               |            |



| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                         |            |
| 115     |         | 321.81 | 321.91 | .10                 | .08                 | 322.2            | Mudstone               | carbonaceous, thin coal stringers, a "gynko" leaf impression, a one cm calcite vein and .5 cm coal band in middle.                                                                                      | VIT 34 ✓   |
| 115     | 55      | 321.91 | 323.57 | 1.66                | 1.36                |                  | Silty Mudstone         | with two 10 cm very fine grained sandstone interbeds at top, rootlets at top, wispy calcite veining throughout, silty mudstone is faintly interbedded, carbonaceous plant remains, rare coal stringers. |            |
| 115     |         | 323.57 | 323.62 | .05                 | .04                 |                  | Coal                   | sheared, bright,                                                                                                                                                                                        |            |
| 115     |         | 323.62 | 323.9  | .28                 | .24                 |                  | Carbonaceous Mudstone  | grades to silty Mudstone at base with discontinuous coal bands and stringers, carbonaceous plant remains and a pyrite nodule, polished surfaces, calcite veinlets parallel to bedding.                  |            |
| 115     |         | 323.9  | 324.41 | .51                 | .45                 |                  | Silty Mudstone         | highly disturbed, numerous rootlets, churned, bioturbation (minor), mottled sandstone, carbonaceous plant remains.                                                                                      |            |
| 116     |         | 324.41 | 325.17 | .76                 | .68                 |                  | Silty Mudstone         | as above                                                                                                                                                                                                |            |
| 116     |         | 325.17 | 325.43 | .26                 | .24                 | 325.2            | Silty Mudstone         | as above                                                                                                                                                                                                |            |
| 116     | 68°     | 325.43 | 326.46 | 1.03                | .95                 |                  | Sandstone              | with siltstone interbeds up to 3 cm, muddy, silty and sandy interlamina-tions, rootlet, worm burrows, micaceous, dark and light grey laminations give striped appearance.                               |            |
| 116-117 |         | 326.46 | 327.47 | 1.01                | .94                 |                  | Silty Mudstone         | mottled, churned, bioturbated, disturbed laminations, polished surfaces, carbonaceous plant remains towards base.                                                                                       |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                 | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                 |            |
| 117     |         | 327.47 | 328.10 | .63                 | .58                 |                  | Mudstone               | slightly silty, coal stringers in bottom half, carbonaceous plant remains at base.                                                                                                                                              |            |
| 117     |         | 328.10 | 328.60 | .50                 | .45                 | 328.3            | Mudstone               | as above, very carbonaceous and coaly at base, polished surfaces at base, calcite veining, sheared at base.                                                                                                                     |            |
|         |         | 328.60 | 328.67 | .07                 | .06                 |                  | Lost Core              | (Mudstone)                                                                                                                                                                                                                      |            |
| 117-118 | 60°     | 328.67 | 329.9  | 1.23                | 1.07                |                  | Sandstone              | very fine grained, dirty at top, laminated, rootlets, silty interlamina-tions, worm burrows, good stick, rare carbonaceous plant remains, thin discontinuous coal band (5 cm thick) at 25 cm from top.                          |            |
| 118     |         | 329.9  | 330.22 | .32                 | .28                 |                  | Silty Mudstone         | coal stringers and carbonaceous plant remains, polished surfaces, calcite veinlets parallel to bedding.                                                                                                                         |            |
| 118     |         | 330.22 | 330.50 | .28                 | .24                 | 330.7            | Silty Mudstone         | as above                                                                                                                                                                                                                        |            |
| 118-119 | 60°     | 330.50 | 332.63 | 2.13                | 1.84                |                  | Sandstone              | very fine grained, cross laminated with siltstone interlamina-tions, rootlets and worm burrows, carbonaceous plant remains, slicked calcite surfaces.                                                                           |            |
| 119     |         | 332.63 | 333.32 | .69                 | .59                 |                  | Siltstone              | very fine grained sandy interlamina-tions (faint), polished surfaces, sparse faint carbonaceous plant fragments, occasional silty mudstone interbeds.<br><br>NOTE: END OF GEOPHYSICAL LOG - assume no core loss to end of hole. |            |
| 119     |         | 333.32 | 333.56 | .24                 | .20                 | 333.8            | Siltstone              | as above grading into silty mudstone                                                                                                                                                                                            |            |
| 119     | 57°     | 333.56 | 333.81 | .25                 | .21                 |                  | Silty Mudstone         | faint interbeds, grades to mudstone                                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                       | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                       |            |
| 119     |         | 333.81 | 334.93 | 1.12               | .97                |                  | Mudstone               | silty in places, coal stringers and polished surfaces at base, up to 1 cm coal bands, carbonaceous plant remains throughout, becoming more carbonaceous towards base. |            |
| 119-120 | 63°     | 334.93 | 336.11 | 1.18               | 1.05               |                  | Silty Mudstone         | as previously described, with carbonaceous plant remains, silty laminations, carbonaceous polished surface with calcite veinlet at base.                              |            |
|         |         |        | 336.11 |                    |                    | 336.8            |                        | END OF HOLE                                                                                                                                                           |            |

ESSO RESOURCES CANADA LIMITED - COAL DIVISION  
CORE & COAL CORE DESCRIPTION

|          |               |
|----------|---------------|
| Project  | Falling Creek |
| Map Area | 930, 93P      |

|       |          |
|-------|----------|
| Begin | 18/06/83 |
| End   | 23/06/83 |

|                  |           |
|------------------|-----------|
| Core Examiner(s) | D. Hallas |
| S.D. Carr        | S. Carr   |

|          |       |
|----------|-------|
| Hole No. | 83-15 |
|----------|-------|

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of 27

Hole Particulars

|             |                                |              |     |
|-------------|--------------------------------|--------------|-----|
| Location    | L/ 50019 North<br>E 53480 East |              |     |
| Elevation   | 1185 m                         | Hole Bearing | -   |
| Total Depth | 205.96 m                       | Hole Angle   | 90° |

Coring Performance

|                |        |
|----------------|--------|
| Core Diameter  | HQ     |
| Core Recovered | 203.28 |
| Length Cored   | 204.08 |
| Core Recovery  | 99.6%  |

Logging

|           |                  |
|-----------|------------------|
| Logged By | BPB- Neil Harvey |
|           | Neutron          |
|           | CCS              |
|           | Dipmeter         |
|           | LSD/BRD          |

|                  |            |
|------------------|------------|
| Examination Date | June, 1983 |
|------------------|------------|

| Box No. | BCA (°) | Depth |      | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                  | Sample No. |
|---------|---------|-------|------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To   |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                  |            |
| 1       |         | 0.00  | 1.88 | 2.27                |                     |                  | Overburden             | triconed to bedrock at 3.66 m                                                                                                                                                                                                                                                                                                                    |            |
| 1       |         | 1.88  | 3.84 | 1.96                |                     |                  | No recovery            | (cored)                                                                                                                                                                                                                                                                                                                                          |            |
| 1       |         | 3.84  | 4.17 | .33                 |                     | 4.26             | Lost Core              |                                                                                                                                                                                                                                                                                                                                                  |            |
| 1       |         | 4.17  | 4.77 | .60                 |                     |                  | Mudstone               | highly weathered, broken                                                                                                                                                                                                                                                                                                                         |            |
| 1       |         | 4.77  | 4.99 | .22                 |                     |                  | Mudstone               | moderately weathered                                                                                                                                                                                                                                                                                                                             |            |
| 1       |         | 4.99  | 5.31 | .32                 |                     |                  | Bioturbated Mudstone   | medium dark grey, completely bioturbated, abundant burrows, pyrite nodules, pyritized burrows, sometimes arenaceous, generally all sedimentary structures obliterated or obscured by biological reworking, where sandstone laminations or very thin interbeds are present they are churned and bioturbated giving the core a mottled appearance. |            |

| Box No. | BCA (°) | Depth |      | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Sample No. |
|---------|---------|-------|------|--------------------|--------------------|------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To   |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| 1       |         | 5.31  | 5.79 | .48                |                    | 6.10             | Bioturbated Mudstone/Sandstone | <p><b>Burrows:</b></p> <p>1) elliptically shaped in cross section, tiny (.01-.03 cm diameter), elongate parallel to bedding, infilled with dark grey mudstone (?Chondrites), these burrows are abundant.</p> <p>2) elongated, nonoriented, faint, sometimes sand filled (0.10-0.50 cm in diameter), not as common.</p> <p><b>Facies:</b> Marine shallow, nutrients and oxygenated environment allow prolific biological populations, relatively low energy.</p> <p>Mudstone as above with very thin (0.5-4.0 cm thick) medium light grey, laminated, very fine grained sandstone interbeds throughout, the sandstone interbeds may show any degree of bioturbation, burrowing and churning, laminations may be distinctly preserved, vague or observed depending upon the degree of biological activity, pyrite nodules, burrows are same as those described as above.</p> <p><b>Facies:</b> as above, slightly higher energy transporting sandgrains, the mudstone may be more bioturbated due to rapid influx of sand (not as much time for bioturbation) or perhaps the mudstone is preferentially bioturbated.</p> |            |
| 1       |         | 5.79  | 5.93 | .14                |                    |                  | Sandstone                      | <p>medium light grey, very fine grained, laminated and cross-bedded (high angle), sharp basal contact, abrupt upper contact, top of unit may be burrowed and moderately bioturbated, generally the sedimentary structures are well preserved and undisturbed especially in the lower part of the unit, sandstones do not fine upward, at basal contact sandstone often fills vertical burrows in the underlying mudstone units.</p> <p><b>Facies:</b> Shallow marine, high energy, rapid deposition, ie. storm-surge.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |

| Box No. | BCA (°) | Depth |      | App. Thickness (m) | True Thickness (m) | Marker Block (m)                      | LITHOLOGIC DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                 | Sample No. |
|---------|---------|-------|------|--------------------|--------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------|
|         |         | From  | To   |                    |                    |                                       | MAIN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Amplified (Include Coal Recovery for Each Seam) |            |
| 1       |         | 5.93  | 6.64 | .71                |                    |                                       | Bioturbated Mudstone/Sandstone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |            |
| 2       |         | 6.64  | 7.51 | .87                |                    |                                       | Bioturbated Mudstone/Sandstone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |            |
| 2       |         | 7.51  | 7.76 | .25                | 8.23               | Thinly Interbedded Mudstone/Sandstone | thin interbeds (0.5-3 cm thick), ratio of mudstone to sandstone varies from 70:30 to 30:70, mudstone is medium dark grey with abundant small dark grey elliptical burrows and irregularly shaped sandier medium size burrows (as described before), sandstone interbeds are medium light grey, very fine grained, laminated, sometimes cross laminated, burrowed and bioturbated. Dewatering and compaction structures are visible at sandstone/mudstone contacts and in sandstone interbeds (ie. flame structures, rare ball and pillow structures, pillows, microfaults, contorted bedding). Pyrite nodules are common throughout. Large (1 cm by 5 cm) tubes occur in the sandstone interbeds as well as vaguely defined irregularly shaped horizontal tubes (0.25-2.5 cm) and vertical linear mud infilled tubes (0.10 x 2.0 cm), occasional lined burrows. This facies is intermediate in energy and depositional rate between the sandstone facies (higher energy) and the bioturbated mudstone (lower energy). |                                                 |            |
| 2       |         | 7.76  | 7.80 | .04                |                    | Sandstone                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                 |            |
| 2       | 50°     | 7.80  | 8.51 | .71                |                    | Bioturbated Mudstone/Sandstone        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                 |            |
| 2       |         | 8.51  | 9.14 | .63                |                    | Silty Sandstone                       | faint laminations, faint burrows, medium light grey.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                 |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                |                                                                      | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|---------------------------------------|----------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                                  | Amplified (Include Coal Recovery for Each Seam)                      |            |
| 3       |         | 9.14  | 9.79  | .65                |                    |                  | Silty Sandstone                       | faint laminations, faint burrows, medium light grey                  |            |
| 3       |         | 9.79  | 10.55 | .76                |                    |                  | Bioturbated Mudstone/Sandstone        |                                                                      |            |
| 3       |         | 10.55 | 11.65 | 1.10               |                    | 11.28            | Bioturbated Mudstone/Sandstone        |                                                                      |            |
| 4       |         | 11.65 | 11.77 | .12                |                    |                  | Bioturbated Mudstone/Sandstone        | Sharp lower contact                                                  |            |
| 4       |         | 11.77 | 12.25 | .48                |                    |                  | Bioturbated Mudstone                  |                                                                      |            |
| 4       | 65°     | 12.25 | 13.55 | 1.30               |                    |                  | Thinly interbedded Mudstone/Sandstone | highly broken at top                                                 |            |
| 4       |         | 13.55 | 14.27 | .72                |                    | 14.3             | Bioturbated Mudstone                  | large pyrite and calcite zone associated with a carbonaceous horizon |            |
| 5       |         | 14.27 | 15.10 | .83                |                    |                  | Bioturbated Mudstone                  |                                                                      |            |
| 5       | 45°     | 15.10 | 16.41 | 1.31               |                    |                  | Thinly Interbedded Sandstone/Mudstone |                                                                      |            |

| Box No. | BCA (°)           | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                 |                                                                                                             | Sample No. |
|---------|-------------------|-------|-------|--------------------|--------------------|------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------|------------|
|         |                   | From  | To    |                    |                    |                  | MAIN                                   | Amplified (Include Coal Recovery for Each Seam)                                                             |            |
| 5       |                   | 16.41 | 16.68 | .27                |                    | 17.37            | Thinly Inter-bedded Sandstone/Mudstone | sharp basal contact, at 16.5 m there is a 3 cm thick calcite vein with angular bioturbated sandstone clasts |            |
| 5       |                   | 16.68 | 16.90 | .22                |                    |                  | Bioturbated Mudstone                   |                                                                                                             |            |
| 6       |                   | 16.90 | 19.25 | .80                |                    |                  | Bioturbated Mudstone                   |                                                                                                             |            |
| 6       | 48°               | 19.25 | 20.80 | 1.55               |                    |                  | Bioturbated Mudstone/Sandstone         |                                                                                                             |            |
| 6       |                   | 20.80 | 21.08 | .28                |                    | 20.4             | Bioturbated Mudstone/Sandstone         |                                                                                                             |            |
| 7       | 50°<br>60°<br>50° | 21.08 | 23.80 | 2.72               |                    |                  | Bioturbated Mudstone/Sandstone         | 10 cm thick cross-bedded sandstone approximately 1/3 from top (has sharp basal contact)                     |            |
| 8       |                   | 23.80 | 25.60 | 1.80               |                    | 23.47            | Bioturbated Mudstone                   | 12 cm laminated sandstone bed in center                                                                     |            |
| 8       |                   | 25.60 | 26.41 | .81                |                    |                  | Bioturbated Mudstone/Sandstone         |                                                                                                             |            |



| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                |                                                                                                                                                                 | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                                  | Amplified (Include Coal Recovery for Each Seam)                                                                                                                 |            |
| 9       |         | 26.41 | 26.81 | .40                |                    |                  | Bioturbated Mudstone/Sandstone        | also .5 mm sized sandfilled burrows in mudstone, abundant in a thin band giving the core a "speckled" appearance, then (0.3 cm) 2 cm tall lined vertical burrow |            |
| 9       | 58°     | 26.81 | 28.17 | 1.36               | 26.52              |                  | Thinly Interbedded Mudstone/Sandstone |                                                                                                                                                                 |            |
| 9       |         | 28.17 | 29.08 | .91                |                    |                  | Bioturbated Mudstone                  |                                                                                                                                                                 |            |
| 10      |         | 29.08 | 29.72 | .64                |                    |                  | Bioturbated Mudstone                  |                                                                                                                                                                 |            |
| 10      | 45°     | 29.72 | 31.70 | 1.98               | 29.57              |                  | Bioturbated Mudstone/Sandstone        | possible lost core in middle of unit, polished surfaces with some calcite veining                                                                               |            |
| 11      |         | 31.70 | 32.82 | 1.12               |                    |                  | Bioturbated Mudstone                  | quite sandy                                                                                                                                                     |            |
| 11      |         | 38.82 | 34.36 | 1.54               | 32.61              |                  | Bioturbated Sandstone/Mudstone        | lost core at top of unit, some thin interbeds only moderately bioturbated                                                                                       |            |
| 12      |         | 34.36 | 35.70 | 1.34               |                    |                  | Bioturbated Sandstone/Mudstone        |                                                                                                                                                                 |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                                                                                              | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                              |            |
| 12      | 50°     | 35.70 | 37.02 | 1.32                |                     | 35.66            | Bioturbated Sandstone/Mudstone | large 2.5 cm x 4 cm vertical burrow                                                                                                                                                                          |            |
| 13      |         | 37.02 | 37.96 | .94                 |                     |                  | Bioturbated Sandstone/Mudstone | broken at base, 60:40 percent sandstone:mudstone, some cross-bedded sandstone interbeds                                                                                                                      |            |
| 13      |         | 37.96 | 38.73 | .77                 |                     |                  | Interbedded Sandstone/Mudstone | bioturbated                                                                                                                                                                                                  |            |
| 13      | 52°     | 37.73 | 39.93 | 1.20                |                     | 38.71            | Interbedded Sandstone/Mudstone | numerous angular, pseudo rhombic, "rosette" shaped mineralized crystals, varying from mm to 1 cm x 4 cm size. Slightly harder than sandstone, calcareous (as is rest of core), unit is slightly bioturbated. |            |
| 14      | 50°     | 39.93 | 41.18 | 1.25                |                     |                  | Interbedded Sandstone/Mudstone | slightly bioturbated, 15 cm thick very dark grey massive mudstone best in center, unit has sharp lower contact                                                                                               |            |
| 14      |         | 41.18 | 41.84 | .66                 |                     |                  | Bioturbated Mudstone           |                                                                                                                                                                                                              |            |
| 14      |         | 41.84 | 42.63 | .79                 |                     | 41.76            | Bioturbated Mudstone           |                                                                                                                                                                                                              |            |
| 15      |         | 42.63 | 43.98 | 1.35                |                     |                  | Bioturbated Mudstone           | sandy interbeds at top                                                                                                                                                                                       |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                                                                                    | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                    |            |
| 15      |         | 43.98 | 44.81 | .83                 |                     |                  | Bioturbated Mudstone/Sandstone | very distinct numerous sandfilled, "sausage" shaped 1 cm x 2 cm burrows at top of unit                                                                                                             |            |
| 15      |         | 44.81 | 44.99 | .18                 | 44.81               |                  | Bioturbated Mudstone/Sandstone | sharp basal contact                                                                                                                                                                                |            |
| 15      |         | 44.99 | 45.28 | .29                 |                     |                  | Bioturbated Mudstone           |                                                                                                                                                                                                    |            |
| 16      |         | 45.28 | 45.99 | .71                 |                     |                  | Bioturbated Mudstone           |                                                                                                                                                                                                    |            |
| 16      | 52°     | 45.99 | 46.67 | .68                 |                     |                  | Bioturbated Sandstone/Mudstone | less bioturbated at top                                                                                                                                                                            |            |
| 16      |         | 46.67 | 47.92 | 1.25                |                     |                  | Bioturbated Mudstone           | large sand filled burrow                                                                                                                                                                           |            |
| 16      |         | 47.92 | 48.10 | .18                 | 47.85               |                  | Bioturbated Mudstone           |                                                                                                                                                                                                    |            |
| 17      |         | 48.10 | 50.84 | 2.74                |                     |                  | Bioturbated Sandstone/Mudstone | unbioturbated laminated sandstone interbeds throughout, lined burrows (medium sized), numerous large vertical burrows, zone of small mm scale mud filled burrows giving core a speckled appearance |            |

| Box No. | BCA (°)    | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                   | Sample No. |
|---------|------------|-------|-------|---------------------|---------------------|------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From  | To    |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                   |            |
| 18      | 50°<br>55° | 50.84 | 53.58 | 2.74                |                     |                  | Interbedded Sandstone/Mudstone | bioturbated in the center, some sandstone interbeds are cross-bedded                                                              |            |
| 19      |            | 53.58 | 53.83 | .25                 |                     |                  | Interbedded Sandstone/Mudstone | mudstone heavily bioturbated                                                                                                      |            |
| 19      | 38°        | 53.83 | 56.26 | 2.43                |                     | 50.90            | Interbedded Sandstone/Mudstone | minor calcite stringers and a centimeter calcite vein parallel to bedding numerous pseudo rhombic replacement crystal-like shapes |            |
| 20      |            | 56.26 | 56.63 | .37                 |                     |                  | Interbedded Sandstone/Mudstone |                                                                                                                                   |            |
| 20      |            | 56.63 | 56.82 | .19                 |                     |                  | Interbedded Mudstone/Sandstone | slickensides, calcite vein at low angle to bedding, fractured with calcite veins perpendicular to bedding, no apparent core loss  |            |
| 20      | 56°<br>59° | 56.82 | 59.22 | 2.40                |                     | 53.95            | Interbedded Sandstone/Mudstone |                                                                                                                                   |            |

| Box No. | BCA (°)    | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                         | Sample No. |
|---------|------------|-------|-------|--------------------|--------------------|------------------|--------------------------------|---------------------------------------------------------|------------|
|         |            | From  | To    |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)         |            |
| 21      | 55°        | 59.22 | 60.16 | .94                |                    |                  | Interbedded Mudstone/Sandstone |                                                         |            |
| 21      | 46°<br>55° | 60.16 | 61.42 | 1.26               |                    | 57.0             | Interbedded Mudstone/Sandstone | sandier at base                                         |            |
| 21      |            | 61.42 | 61.68 | .26                |                    |                  | Sandstone                      | laminated, sharp basal contact                          |            |
| 21      |            | 61.68 | 61.83 | .15                |                    |                  | Interbedded Mudstone/Sandstone |                                                         |            |
| 22      |            | 61.83 | 63.16 | 1.33               |                    |                  | Interbedded Mudstone/Sandstone | big pyrite nodule associated with carbonaceous stringer |            |
| 22      | 55°<br>55° | 63.16 | 63.78 | .62                |                    | 60.5             | Interbedded Mudstone/Sandstone | Broken at top of unit, muddy at top, sandy at bottom    |            |
| 22      | 55°        | 63.78 | 64.66 | .88                |                    |                  | Bioturbated Mudstone           | dark grey                                               |            |
| 23      |            | 64.66 | 66.34 | 1.68               |                    |                  | Bioturbated Mudstone           | occasional faint sandstone interbeds                    |            |
| 23      |            | 66.34 | 67.25 | .91                |                    | 63.09            | Bioturbated Mudstone           | possible lost core base of unit                         |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                 | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam) |            |
| 24      |         | 67.25 | 67.96 | .71                 |                     |                  | Bioturbated Mudstone   |                                                 |            |
| 24      |         | 67.96 | 69.96 | 2.00                |                     | 66.14            | Bioturbated Mudstone   | broken at base                                  |            |
| 25      |         | 69.96 | 72.36 | 2.40                |                     |                  | Bioturbated Mudstone   |                                                 |            |
| 25      |         | 72.36 | 72.74 | .38                 |                     | 69.20            | Bioturbated Mudstone   |                                                 |            |
| 26      |         | 72.74 | 74.97 | 2.23                |                     |                  | Bioturbated Mudstone   |                                                 |            |
| 26      |         | 74.97 | 75.50 | .53                 |                     | 72.24            | Bioturbated Mudstone   | broken at base                                  |            |
| 27      |         | 75.50 | 77.93 | 2.43                |                     |                  | Bioturbated Mudstone   |                                                 |            |
| 27      |         | 77.93 | 78.33 | .40                 |                     | 75.29            | Bioturbated Mudstone   |                                                 |            |
| 28      | 48°     | 78.33 | 81.02 | 2.69                |                     |                  | Bioturbated Mudstone   | some thin, faint sandstone interbeds            |            |
| 28      |         | 81.02 | 81.12 | .10                 |                     | 78.33            | Bioturbated Mudstone   |                                                 |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                       | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                       |            |
| 29      |         | 81.12 | 81.60 | .48                |                    |                  | Bioturbated Mudstone           |                                                                                                                       |            |
| 29      |         | 81.60 | 82.89 | 1.29               |                    |                  | Interbedded Sandstone/Mudstone | Sandstone inturbed at top and middle with laminations and crossbeds 2 cm x 3 cm mineralized rosette near base         |            |
| 29      |         | 82.89 | 83.30 | .41                |                    |                  | Sandstone                      | laminated                                                                                                             |            |
| 29      |         | 83.30 | 83.47 | .17                |                    |                  | Bioturbate Mudstone            | millimeter scale sand filled burrows (white speckles)                                                                 |            |
| 29      |         | 83.47 | 83.50 | .03                |                    |                  | Calcite and Sandstone Breccia  | angular sandstone fragments                                                                                           |            |
| 29      |         | 83.50 | 83.88 | .38                |                    |                  | Interbedded Sandstone/Mudstone |                                                                                                                       |            |
| 30      |         | 83.88 | 84.17 | .29                |                    |                  | Sandstone                      | broken                                                                                                                |            |
| 30      |         | 84.17 | 86.52 | 2.35               |                    |                  | Interbedded Sandstone/Mudstone | 20 cm thick cross-bedded sandstone in middle of unit, cm square sized rosette recrystal/minaralization, sandy at base |            |
| 31      |         | 86.52 | 86.70 | .18                |                    |                  | Sandstone                      |                                                                                                                       |            |
| 31      |         | 86.70 | 87.12 | .42                |                    |                  | Interbedded Sandstone/Mudstone |                                                                                                                       |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                   | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|--------------------------------|-----------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                   |            |
| 31      |         | 87.12 | 87.48 | .36                 |                     | 84.42            | Sandstone                      |                                                                                   |            |
| 31      |         | 87.48 | 88.95 | 1.47                |                     |                  | Interbedded Sandstone/Mudstone | - tiny (2 mm) calcite infilled? burrows,<br>- grades down to bioturbated mudstone |            |
| 31      |         | 88.95 | 89.10 | .15                 |                     |                  | Sandstone                      |                                                                                   |            |
| 31      |         | 89.10 | 89.31 | .21                 |                     |                  | Bioturbated Mudstone           | large (1 cm x 15 cm) sandfilled tube/burrow                                       |            |
| 32      |         | 89.31 | 89.46 | .15                 |                     |                  | Bioturbated Sandstone/Mudstone |                                                                                   |            |
| 32      |         | 89.46 | 89.76 | .30                 |                     | 87.48            | Interbedded Sandstone/Mudstone |                                                                                   |            |
| 32      |         | 89.76 | 90.69 | .93                 |                     |                  | Bioturbated Mudstone           |                                                                                   |            |
| 32      |         | 90.69 | 92.13 | 1.44                |                     |                  | Bioturbated Sandstone/Mudstone |                                                                                   |            |
| 33      |         | 92.13 | 93.20 | 1.07                |                     |                  | Bioturbated Mudstone           |                                                                                   |            |
| 33      |         | 93.20 | 93.88 | .68                 |                     | 90.52            | Bioturbated Mudstone           |                                                                                   |            |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                      | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------------|----------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                      |            |
| 33      |         | 93.88  | 94.85  | .97                |                    |                  | Bioturbated Mudstone/Sandstone | lined burrow                                                         |            |
| 34      |         | 94.85  | 96.09  | 1.24               |                    |                  | Bioturbated Sandstone/Mudstone |                                                                      |            |
| 34      |         | 96.09  | 97.60  | 1.51               |                    | 93.57            | Bioturbated Mudstone           |                                                                      |            |
| 35      |         | 97.60  | 98.48  | .88                |                    |                  | Bioturbated Mudstone           |                                                                      |            |
| 35      |         | 98.48  | 99.30  | .82                |                    |                  | Bioturbated Mudstone/Sandstone |                                                                      |            |
| 35      | 58°     | 99.30  | 100.45 | 1.15               |                    | 96.62            | Bioturbated Mudstone/Sandstone |                                                                      |            |
| 36      | 50°     | 100.45 | 102.23 | 1.78               |                    |                  | Bioturbated Mudstone           | 20 cm sandstone at top                                               |            |
| 36      | 56°     | 102.23 | 103.18 | .95                |                    | 99.66            | Bioturbated Mudstone           |                                                                      |            |
| 37      |         | 103.18 | 105.26 | 2.08               |                    |                  | Bioturbated Mudstone           | 2 cm thick calcite vein 40 cm from top of unit, basal 60 cm is sandy |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                 | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------------|---------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                 |            |
| 37      |         | 105.26 | 105.99 | .73                |                    | 102.71           | Bioturbated Mudstone/Sandstone |                                                                                 |            |
| 38      | 54°     | 105.99 | 107.08 | 1.09               |                    |                  | Bioturbated Mudstone/Sandstone |                                                                                 |            |
| 38      |         | 107.08 | 108.35 | 1.27               |                    |                  | Bioturbated Mudstone           | broken at base, faint sandstone interlamina-tions                               |            |
| 38      |         | 108.35 | 108.70 | .35                |                    | 105.76           | Bioturbated Mudstone           |                                                                                 |            |
| 39      |         | 108.70 | 109.04 | .34                |                    |                  | Bioturbated Mudstone           |                                                                                 |            |
| 39      |         | 109.04 | 111.40 | 2.36               |                    |                  | Bioturbated Sandstone/Mudstone |                                                                                 |            |
| 40      |         | 111.40 | 114.17 | 2.77               |                    | 108.81           | Bioturbated Mudstone/Sandstone | tiny speckled mud filled burrows, thin laminated sandstone interbeds throughout |            |
| 41      |         | 114.17 | 114.56 | .39                |                    |                  | Bioturbated Mudstone/Sandstone | broken at base                                                                  |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                             | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                             |            |
| 41      |         | 114.56 | 116.04 | 1.48                |                     | 111.86           | Bioturbated Mudstone/Sandstone | 20 cm laminated sandstone at top                                                                                                            |            |
| 41      |         | 116.04 | 116.40 | .36                 |                     |                  | Sandstone                      | fine grained, cross bedded                                                                                                                  |            |
| 41      |         | 116.40 | 116.49 | .09                 |                     |                  | Mudstone                       | pyrite lined joint surface perpendicular to bedding, calcite veining associated with carbonaceous material at the top, highly broken at top |            |
| 41      |         | 116.49 | 116.81 | .32                 |                     |                  | Sandstone                      | 2 cm band of elongate mudstone intraclasts near top, crossbedded, thin calcite veins at high angle to bedding                               |            |
| 42      |         | 116.81 | 117.57 | .76                 |                     |                  | Sandstone                      | 1 cm thick calcite bands 60 cm from top                                                                                                     |            |
| 42      |         | 117.57 | 119.08 | 1.51                |                     | 114.90           | Sandstone                      | Calcite veins subparallel to bedding throughout, top half is argillaceous                                                                   |            |
| 42      |         | 119.08 | 119.17 | .09                 |                     |                  | Sandstone                      | broken, 2 cm thick calcite vein, polished carbonaceous surface, well developed calcite crystals                                             |            |
| 42      |         | 119.17 | 119.56 | .39                 |                     |                  | Sandstone                      | calcite stringers at angles to bedding, convolute laminations                                                                               |            |
| 43      |         | 119.56 | 120.63 | 1.07                |                     |                  | Sandstone                      | laminated, calcite stringers, cross bedded, bottom half broken with abundant calcite veins, polished surfaces, slickensides                 |            |
| 43      |         | 120.63 | 121.78 | 1.15                |                     | 117.95           | Sandstone                      | broken, crossbedded, polished carbonaceous surfaces, thin bioturbated mudstone interbeds in lower half                                      |            |
| 44      |         | 121.78 | 122.60 | .82                 |                     |                  | Sandstone                      | cross laminated, 5 cm and 15 cm bioturbated mudstone bands in center, broken at base                                                        |            |

| Box No. | BCA (°)    | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                   |                                                                                                                                        | Sample No. |
|---------|------------|--------|--------|--------------------|--------------------|------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                    |                    |                  | MAIN                                                     | Amplified (Include Coal Recovery for Each Seam)                                                                                        |            |
| 44      |            | 122.60 | 124.0  | 1.40               |                    | 120.09           | Sandstone                                                | slightly bioturbated, very broken at top                                                                                               |            |
| 44      |            | 124.00 | 124.63 | .63                |                    | 121.00           | Bioturbated Mudstone/Sandstone                           | broken at base, 1 cm thick calcite vein at top                                                                                         |            |
| 45      | 58°<br>58° | 124.63 | 127.06 | 2.43               |                    |                  | Bioturbated Sandstone/Mudstone                           | 17 cm thick sandstone bed at top, large pyritized nodule at base, also at base there is a wood fragment replaced by pyrite and calcite |            |
| 45      |            | 127.06 | 127.33 | .27                |                    | 124.05           | Bioturbated Sandstone/Mudstone                           |                                                                                                                                        |            |
| 46      |            | 127.33 | 127.93 | .60                |                    |                  | Bioturbated Sandstone/Mudstone                           |                                                                                                                                        |            |
| 46      |            | 127.93 | 128.35 | .42                |                    |                  | Sandstone                                                | convolute laminae                                                                                                                      |            |
| 46      |            | 128.35 | 130.12 | 1.77               |                    |                  | Interbedded Laminated Sandstone/Bio-Bioturbated Mudstone | 40% sandstone: 60% mudstone, sharp contacts between mudstone and sandstone<br>1 cm thick calcite vein near base                        |            |
| 47      | 53°        | 130.12 | 132.84 | 2.72               |                    | 127.10           | Interbedded Mudstone/Sandstone                           | calcite vein (2 cm thick) and slickensided surfaces 0.9 m from base, 20% is laminated relatively clean sandstone interbeds             |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                              | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|--------------------------------|--------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)              |            |
| 48      |         | 132.84 | 133.17 | .33                 |                     |                  | Bioturbated Mudstone/Sandstone | 0.5 cm long horizontal sandfilled burrow                     |            |
| 48      |         | 133.17 | 134.07 | .90                 |                     | 131.50           | Interbedded Mudstone/Sandstone | Mudstone is very churned                                     |            |
| 48      | 60°     | 134.07 | 135.58 | 1.51                |                     |                  | Bioturbated Mudstone           | calcite lined fractures parallel to core axis, sandy at base |            |
| 49      |         | 135.58 | 135.77 | .19                 |                     |                  | Bioturbated Mudstone           | calcite lined fracture parallel to core axis                 |            |
| 49      |         | 135.77 | 136.03 | .26                 |                     |                  | Sandstone                      | calcite lined fracture parallel to core axis                 |            |
| 49      |         | 136.03 | 136.14 | .11                 |                     |                  | Bioturbated Mudstone/Sandstone | calcite lined fracture parallel to core axis                 |            |
| 49      |         | 136.14 | 137.00 | .86                 |                     | 133.20           | Interbedded Sandstone/Mudstone | calcite lined fracture parallel to core axis                 |            |
| 49      |         | 137.00 | 137.25 | .25                 |                     |                  | Bioturbated Mudstone           | end of the calcite lined vertical fracture                   |            |
| 49      |         | 137.25 | 137.40 | .15                 |                     |                  | Calcite Vein                   | upper 5 cm is mudstone with calcite veinlets throughout      |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                           | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|--------------------------------|-------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                           |            |
| 50      |         | 137.40 | 138.21 | .81                 |                     |                  | Interbedded Sandstone/Mudstone | mudstone is quite churned and burrowed, irregular calcite stringers in upper half of unit |            |
| 50      | 60°     | 138.21 | 139.15 | .94                 |                     |                  | Interbedded Sandstone/Mudstone | broken at base                                                                            |            |
| 50      |         | 139.15 | 139.43 | .28                 |                     | 136.25           | Interbedded Mudstone/Sandstone | broken                                                                                    |            |
| 50      |         | 139.43 | 140.49 | 1.06                |                     |                  | Bioturbated Mudstone           | sharp basal contact, arenaceous                                                           |            |
| 50      | 63°     | 140.49 | 140.89 | .40                 |                     |                  | Bioturbated Sandstone/Mudstone | 80% sandstone: 20% mudstone, little "growth" crystals                                     |            |
| 51      |         | 140.89 | 141.69 | .80                 |                     |                  | Interbedded Sandstone/Mudstone | 80% sandstone: 20% mudstone                                                               |            |
| 51      |         | 141.69 | 142.32 | .63                 |                     | 139.29           | Bioturbated Mudstone/Sandstone | grades downward into unit below                                                           |            |
| 51      |         | 142.32 | 142.55 | .23                 |                     |                  | Sandstone                      | sharp convolute basal contact                                                             |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                        | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------------|--------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                        |            |
| 51      |         | 142.55 | 143.69 | 1.14               |                    |                  | Bioturbated Mudstone/Sandstone | occasional small "growth" crystals, churned                                                            |            |
| 52      |         | 143.69 | 143.89 | .20                |                    |                  | Bioturbated Mudstone/Sandstone |                                                                                                        |            |
| 52      |         | 143.89 | 144.16 | .27                |                    |                  | Sandstone                      | small cross-beds, right way up, sharp upper and lower contact                                          |            |
| 52      |         | 144.16 | 145.76 | 1.60               |                    |                  | Bioturbated Mudstone/Sandstone | near base there is a 4 cm band of "growth" crystals and similar mineral replacement in convolute bands |            |
| 52      |         | 145.76 | 146.27 | .51                |                    | 142.34           | Interbedded Mudstone/Sandstone | with cm sized "growth" crystal "pseudo-rosettes"                                                       |            |
| 52      |         | 146.27 | 146.55 | .28                |                    |                  | Bioturbated Mudstone           |                                                                                                        |            |
| 53      |         | 146.55 | 147.22 | .67                |                    |                  | Sandstone                      | three thin (2 cm thick) mudstone interbeds, sharp contacts                                             |            |
| 53      |         | 147.22 | 147.88 | .66                |                    |                  | Interbedded Sandstone/Mudstone | with large 2 cm diameter "grown crystal" rosettes (* 12 cm core sample containing 5 "crystal growths") | *          |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                                                                                                                              | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                              |            |
| 53      | 63 °    | 147.88 | 149.25 | 1.37               |                    | 145.4            | Interbedded Sandstone/Mudstone | 80% cross bedded sandstone, calcite filled cm thick breccia associated with slickensides 10 cm from base, bottom 10 cm has irregular calcite stringers throughout, 2 cm thick calcite veins perpendicular to bedding .4 m and .5 m from base |            |
| 54      |         | 149.25 | 150.87 | 1.62               |                    |                  | Interbedded Sandstone/Mudstone | 80% cross-bedded sandstone, sandstone interbeds are thicker (up to 20 cm), upper 60 cm of unit riddled with calcite veins and stringers both parallel to bedding and irregularly oriented                                                    |            |
| 54      | 50°     | 150.87 | 152.09 | 1.22               |                    | 148.44           | Interbedded Sandstone/Mudstone | 80% thick interbeds of sandstone, upper 80 cm is very fractured and healed with calcite stringers and veins, mm to 2 cm size "growth" with calcite crystals infilling them                                                                   |            |
| 55      | 40      | 152.09 | 153.84 | 1.75               |                    |                  | Interbedded Sandstone/Mudstone | Numerous calcite stringers perpendicular to bedding, lower half webbed calcite stringers lining listric surfaces, 75% sandstone                                                                                                              |            |
| 55      |         | 153.84 | 154.76 | .92                |                    | 151.49           | Interbedded Sandstone/Mudstone | calcite veins and stringers perpendicular to bedding, upper 20 cm webbed calcite stringers lining listric surfaces, 25 cm thick cross-bedded sandstone in middle of unit                                                                     |            |
| 56      |         | 154.76 | 155.41 | .65                |                    |                  | Interbedded Sandstone/Mudstone | numerous webbed calcite stringers throughout                                                                                                                                                                                                 |            |
| 56      |         | 155.41 | 156.06 | .65                |                    |                  | Brecciated Sandstone/Mudstone  | angular rocks fragment breccia healed with webbed calcite throughout, slickensides, listric surfaces, broken throughout, fault zone                                                                                                          |            |



| Box No. | BCA (°)    | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                                                      | Sample No. |
|---------|------------|--------|--------|--------------------|--------------------|------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                                                      |            |
| 56      |            | 156.46 | 156.72 | .26                |                    |                  | Interbedded Sandstone/Mudstone | broken in center, core loss in center and at base; right way up                                                                                                      |            |
| 56      |            | 156.72 | 157.68 | .96                | 154.08             |                  | Bioturbated Mudstone/Sandstone | calcite stringers on bedding planes associated with listric surfaces                                                                                                 |            |
| 57      | 38°<br>48° | 157.68 | 159.86 | 2.18               |                    |                  | Bioturbated Sandstone/Mudstone | calcite stringers and listric bedding surfaces, 1 cm thick calcite vein 50 cm from base                                                                              |            |
| 57      |            | 159.86 | 160.38 | .52                | 157.12             |                  | Sandstone                      | convolute bedding, minor shear displacement, numerous calcite stringers perpendicular to bedding, listric surfaces                                                   |            |
| 58      |            | 160.38 | 162.00 | 1.62               |                    |                  | Sandstone                      | calcite stringers perpendicular and parallel to bedding in upper and lower part of unit, minor mudstone horizons which contain listric surfaces, sharp basal contact |            |
| 58      |            | 162.00 | 162.82 | .82                |                    |                  | Interbedded Sandstone/Mudstone | calcite webbed and listric surfaces at base, broken at base                                                                                                          |            |
| 58      | 50°        | 162.82 | 163.18 | .36                | 160.17             |                  | Interbedded Sandstone/Mudstone |                                                                                                                                                                      |            |
|         |            | 163.18 | 163.38 | .20                |                    |                  | Lost Core                      |                                                                                                                                                                      |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                        | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                        |            |
| 59      |         | 163.38 | 164.15 | .77                |                    |                  | Bioturbated Sandstone/Mudstone | sharp sandstone contact at base, apparent lost core at top                                                             |            |
| 59      |         | 164.15 | 165.00 | .85                |                    |                  | Interbedded Mudstone/Sandstone | tiny pyrite filled burrow tubes throughout                                                                             |            |
| 59      | 45°     | 165.00 | 166.13 | 1.13               |                    |                  | Interbedded Mudstone/Sandstone | sandy at top, 3 cm thick calcite vein parallel to bedding 45 cm from base                                              |            |
|         |         | 166.13 | 166.33 | .20                |                    |                  | Lost Core                      |                                                                                                                        |            |
| 60      | 55°     | 166.33 | 168.92 | 2.59               |                    | 166.12           | Interbedded Sandstone/Mudstone | calcite stringers and listric surfaces in mudstones, highly broken calcite vein and sandstone fragments 80 cm from top |            |
| 60      |         |        |        |                    |                    |                  |                                |                                                                                                                        |            |
| 61      |         | 168.92 | 169.28 | .36                |                    |                  | Interbedded Sandstone/Mudstone |                                                                                                                        |            |
| 61      | 52°     | 169.28 | 171.56 | 2.28               |                    | 169.16           | Interbedded Sandstone/Mudstone | 75% sandstone, large (1 cm x 9 cm) pyrite nodule 70 cm from top                                                        |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                          | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                          |            |
| 62      |         | 171.56 | 172.30 | .74                |                    |                  | Interbedded Sandstone/Mudstone | 75% sandstone                                                                                                            |            |
| 62      | 50°     | 172.30 | 174.20 | 1.90               |                    | 172.36           | Interbedded Sandstone/Mudstone | 50% sandstone                                                                                                            |            |
| 63      |         | 174.20 | 175.44 | 1.24               |                    | 175.41           | Interbedded Sandstone/Mudstone | 50% sandstone                                                                                                            |            |
| 63      |         | 175.44 | 176.34 | .90                |                    |                  | Interbedded Sandstone/Mudstone | mudstones are bioturbated                                                                                                |            |
| 63      |         | 176.34 | 176.88 | .54                |                    |                  | Bioturbated Mudstone           | sandy throughout                                                                                                         |            |
| 64      |         | 176.88 | 178.51 | 1.63               |                    |                  | Interbedded Sandstone/Mudstone | 50% sandstone, bioturbated mudstones                                                                                     |            |
| 64      |         | 178.51 | 179.59 | 1.08               |                    | 178.62           | Interbedded Mudstone/Sandstone | bioturbated mudstones, 25% sandstone, calcite coated slickensided surfaces 10 cm and 60 cm from base parallel to bedding |            |
| 65      |         | 179.59 | 181.29 | 1.70               |                    |                  | Bioturbated Mudstone           | with thin minor sandstone interbeds                                                                                      |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                       | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                       |            |
| 68      |         | 188.73 | 189.39 | .66                |                    |                  | Sandstone                      | calcite stringer perpendicular to bedding, sharp basal contact, 2 cm thick mudstone interbed near top of unit         |            |
| 68      | 45°     | 189.39 | 190.40 | 1.01               |                    |                  | Interbedded Sandstone/Mudstone | 60% sandstone, 40% mudstone, sand infilled tubes/burrows up to 1 cm x 9 cm (plus) 1 cm - 5 cm sized "growth" crystals |            |
| 69      |         | 190.40 | 190.80 | .40                |                    |                  | Interbedded Sandstone/Mudstone | 95% sandstone, 4 cm of disseminated pyrite in center                                                                  |            |
| 69      | 45°     | 190.80 | 193.01 | 2.21               |                    | 191.11           | Interbedded Sandstone/Mudstone | some sandstone interbeds are cross-bedded, 60% sandstone, sandier at top                                              |            |
| 70      |         | 193.01 | 193.93 | .92                |                    |                  | Interbedded Sandstone/Mudstone |                                                                                                                       |            |
| 70      | 40°     | 193.93 | 195.77 | 1.84               |                    | 194.16           | Interbedded Sandstone/Mudstone | Mudstone is well burrowed                                                                                             |            |
| 71      |         | 195.77 | 196.95 | 1.18               |                    |                  | Interbedded Mudstone/Sandstone | 70% mudstone, mudstone is more bioturbated                                                                            |            |
| 71      |         | 196.95 | 197.55 | .60                |                    | 197.2            |                                |                                                                                                                       |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                        | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|--------------------------------|--------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                        |            |
| 65      |         | 181.29 | 181.55 | .26                 |                     |                  | Interbedded Sandstone/Mudstone | pyrite nodule 1.0 cm thick in middle broken at base                                                    |            |
| 65      |         | 181.55 | 182.25 | .70                 |                     | 181.66           | Interbedded Sandstone/Mudstone | 85% sandstone                                                                                          |            |
| 66      | 45°     | 182.25 | 184.65 | 2.40                |                     |                  | Interbedded Sandstone/Mudstone | 60% sandstone, bioturbated mudstone, broken at base, cross-bedded sandstones with sharp basal contacts |            |
| 66      |         | 184.65 | 184.95 | .30                 |                     | 184.71           | Interbedded Sandstone/Mudstone |                                                                                                        |            |
| 67      |         | 184.95 | 185.66 | .70                 |                     |                  | Sandstone                      | laminated, cross-laminated, bioturbated mudstone interbed at top                                       |            |
| 67      | 52°     | 185.66 | 188.67 | 1.02                |                     |                  | Interbedded Sandstone/Mudstone | 60% sandstone                                                                                          |            |
| 67      |         | 188.67 | 187.77 | 1.10                |                     |                  | Bioturbated Mudstone           | sandy at base, slightly sandy throughout, tiny calcite lined tubes                                     |            |
| 68      |         | 187.77 | 188.73 | .96                 |                     | 188.06           | Interbedded Mudstone/Sandstone | 50% mudstone; 50% sandstone, 2 cm thick calcite vein and slickenside 40 cm from bottom                 |            |

| Box No. | BCA (°)    | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                                                                  | Sample No. |
|---------|------------|--------|--------|--------------------|--------------------|------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                  |            |
| 71      | 40°        | 197.55 | 198.37 | .82                |                    |                  | Interbedded Sandstone/Mudstone | 1 cm calcite vein, 20 cm from top                                                                                                                                                |            |
| 71      |            | 198.37 | 198.62 | .25                |                    |                  | Sandstone                      |                                                                                                                                                                                  |            |
| 72      | 50°<br>50° | 198.62 | 200.17 | 1.55               |                    |                  | Interbedded Sandstone/Mudstone | 80% sandstone cross-bedded, right way up, grades to minor mudstone 63 cm from base, calcite heeled breccia with angular fragments 12 cm thick                                    |            |
| 72      | 30°        | 200.17 | 201.21 | 1.04               |                    | 200.25           | Interbedded Sandstone/Mudstone | 70% sandstone, 30% mudstone, sandstone is irregular convolute banding, broken zone 1/2 meter from base, numerous, tiny, pyrite filled tubes                                      |            |
| 73      | 40°        | 201.21 | 202.80 | 1.59               |                    |                  | Interbedded Sandstone/Mudstone | 80% sandstone, 20% mudstone, numerous crystal growths up to 2 cm, near base smalls crystal growths associated with large vertical burrows                                        |            |
| 73      |            | 202.80 | 203.92 | 1.12               |                    | 203.30           | Interbedded Sandstone/Mudstone | 80% sandstone, 20% mudstone, numerous crystal growths up to 2 cm, near base smalls crystal growths associated with large vertical burrows                                        |            |
| 74      |            | 203.92 | 205.89 | 1.97               |                    |                  | Interbedded Sandstone/Mudstone | 80% sandstone, 20% mudstone, numerous crystal growths up to 2 cm, near base smalls crystal growths associated with large vertical burrows including crystal/burrow relationships |            |
| 74      |            | 205.89 | 205.96 | .07                |                    |                  | Lost Core                      |                                                                                                                                                                                  |            |
|         |            | 205.96 |        |                    |                    | 206.35           |                                | End of Hole - Total Depth                                                                                                                                                        |            |

ESSO RESOURCES CANADA LIMITED - COAL DIVISION  
CORE & COAL CORE DESCRIPTION

|          |               |
|----------|---------------|
| Project  | FALLING CREEK |
| Map Area | 930, 93P      |

|       |          |
|-------|----------|
| Begin | 24/06/83 |
| End   | 25/06/83 |

|                  |           |
|------------------|-----------|
| Core Examiner(s) | S. CARR   |
|                  | D. HALLAS |

|          |       |
|----------|-------|
| Hole No. | 83-16 |
|----------|-------|

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of 9

Hole Particulars

|             |                |              |   |
|-------------|----------------|--------------|---|
| Location    | 6/ 50215 North |              |   |
|             | 5 51500 East   |              |   |
| Elevation   | 1215           |              |   |
| Total Depth | 77.31          | Hole Bearing |   |
|             |                | Hole Angle   | - |

Coal Coring Performance

|                |       |
|----------------|-------|
| Core Diameter  | HQ    |
| Core Recovered | 73.69 |
| Length Cored   | 73.69 |
| Core Recovery  | 100 % |

Logging

|           |          |
|-----------|----------|
| Logged By | BPB      |
|           | NEUTRON  |
|           | CCS      |
|           | DIPMETER |
|           | BRD/LSD  |

|                  |           |
|------------------|-----------|
| Examination Date | JUNE 1983 |
|------------------|-----------|

| Box No. | BCA (°) | Depth |      | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION             |                                                                                                                                                                                                                                                                                                | Sample No. |
|---------|---------|-------|------|--------------------|--------------------|------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To   |                    |                    |                  | MAIN                               | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                |            |
| 1       |         |       |      |                    |                    |                  | CASING                             | 4.6 meters of casing, TRI-CONED to 4.9 meters according to drillers depths<br>Note: drillers depths uncorrected for height of drill pad above ground level.                                                                                                                                    |            |
| 1       | 0       | 3.62  | 6.31 | 2.69               |                    | 4.9              | Interbedded Sandstone<br>Mudstone  | centimeter sized psuedorhombic growth crystals throughout-frequency approximately 3 per 10 centimeters, broken core interval in the middle, 60% sandstone interbeds, middle more bioturbated, top and bottom preserved sedimentary structures, small scale cross bedding and cross laminations |            |
| 2       | 0       | 6.31  | 6.62 | .31                |                    |                  | Interbedded Sandstone/<br>Mudstone | 80% sandstone, mudstone interbeds are very thin                                                                                                                                                                                                                                                |            |
| 2       | 0       | 6.62  | 9.05 | 2.43               |                    | 7.9              | Interbedded Sandstone/<br>Mudstone | moderately broken a base of interval, ironstained weathered surfaces perpendicular to bedding<br>minor mudstone interbeds, well bioturbated in mudstones, partially bioturbated sandstones                                                                                                     |            |

| Box No. | BCA (°)  | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                |                                                                                                                                                                                                                                                                          | Sample No. |
|---------|----------|-------|-------|--------------------|--------------------|------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To    |                    |                    |                  | MAIN                                  | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                          |            |
| 3       | 0        | 9.05  | 9.55  | 0.50               |                    |                  | Interbedded Sandstone/<br>Mudstone    | same as above                                                                                                                                                                                                                                                            |            |
| 3       | 8        | 9.55  | 11.34 | 1.79               |                    | 11.0             | Sandstone                             | minor mudstone, iron stained on joint surfaces perpendicular to bedding, joint surface parallel to bedding, undulating bedding planes, sharp sandstone/<br>mudstone contacts                                                                                             |            |
| 3       | 0        | 11.34 | 11.84 | 0.50               |                    | 12.6             | Interbedded<br>Mudstone<br>Sandstone  | core is 1/2 well bioturbated mudstone - 1/2 laminated sandstone, contact parallel to core axis                                                                                                                                                                           |            |
| 4       | (6)<br>0 | 11.84 | 12.58 | .74                |                    |                  | Bioturbated<br>Sandstone/<br>Mudstone | mottled and churned bioturbated texture, disseminated pyrite mineralization in sand infilled burrow, numerous burrow types - millimeter to 1 X 2 centimeter sizes                                                                                                        |            |
| 4       | 0        | 12.58 | 13.03 | .45                |                    |                  | Interbedded<br>Sandstone<br>Mudstone  | Sandstones are cross bedded with minor burrows, Mudstone is heavily bioturbated with abundant small (1/2 centimeter) sand filled burrows                                                                                                                                 |            |
| 4       | 0<br>(4) | 13.03 | 14.74 | 1.71               |                    | 14.3             | Interbedded<br>Sandstone<br>Mudstone  | one thin, broken bioturbated mudstone interbed at top, sandstone is very fine grained with mudstone cross laminations to 3 or 4 centimeters thick, occasional burrows of centimeter scale, at base is 1/2 vertical core of clean sandstone-<br>1/2 bioturbated sandstone |            |



| Box No. | BCA (°)   | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION             |                                                                                                                   | Sample No. |
|---------|-----------|-------|-------|---------------------|---------------------|------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------|
|         |           | From  | To    |                     |                     |                  | MAIN                               | Amplified (Include Coal Recovery for Each Seam)                                                                   |            |
| 5       | 0         | 14.74 | 16.03 | 1.29                |                     |                  | Sandstone                          | with a thin bioturbated sandstone/mudstone band along length of core                                              |            |
| 5       |           | 16.03 | 17.50 | 1.47                |                     | 17.4             | Sandstone                          | as above                                                                                                          |            |
| 6       | 0<br>(10) | 17.50 | 20.30 | 2.80                |                     |                  | Interbedded Sandstone/<br>Mudstone | mudstone is bioturbated, sandstone partially burrowed                                                             |            |
| 6       | 0<br>(8)  |       |       |                     |                     |                  |                                    |                                                                                                                   |            |
| 7       | 0<br>(8)  | 20.30 | 22.04 | 1.74                |                     |                  | Interbedded Sandstone/<br>Mudstone | cross laminated and partially bioturbated, iron staining on joint surfaces perpendicular to bedding               |            |
| 7       |           | 22.04 | 23.15 | 1.11                |                     | 23.5             | Interbedded Sandstone/<br>Mudstone | mudstone at base, sandstone moderately burrowed - 1/2 X 6 centimeter sand filled tube at highly angle to bedding. |            |
| 8       | 0<br>(10) | 23.15 | 24.41 | 1.26                |                     |                  | Interbedded Sandstone/<br>Mudstone | same as above, calcite mineralization on polished joint planes nearly parallel to bedding planes in bottom half   |            |
| 8       |           | 24.41 | 24.53 | .12                 |                     |                  | Sandstone/<br>Mudstone             | very broken into small pieces including calcite stringers, some surfaces are polished, likely a zone of core loss |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION             |                                                                                                                          | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                               | Amplified (Include Coal Recovery for Each Seam)                                                                          |            |
| 8       |         | 24.53 | 24.80 | .27                |                    |                  | Interbedded Sandstone/<br>Mudstone | broken, near vertical calcite lined joint                                                                                |            |
| 8       | (12)    | 24.80 | 25.91 | 1.11               | 26.5               |                  | Interbedded Sandstone/<br>Mudstone | as above units                                                                                                           |            |
| 9       | (12)    | 25.91 | 26.3  | .39                |                    |                  | Interbedded Sandstone/<br>Mudstone | as above                                                                                                                 |            |
| 9       |         | 26.30 | 28.01 | 1.71               | 28.0               |                  | Interbedded Sandstone/<br>Mudstone | broken and ground at top<br>sandstone is churned and bioturbated<br>a 12 centimeter thick, hard siltstone band in middle |            |
| 9       |         | 28.01 | 28.73 | .76                |                    |                  | Bioturbated Sandstone/<br>Mudstone | joint plane roughly parallel to bedding                                                                                  |            |
| 10      |         | 28.77 | 31.09 | 2.32               |                    |                  | Interbedded Mudstone/<br>Sandstone | sandy at top                                                                                                             |            |
| 10      |         | 31.09 | 31.62 | .53                | 32.6               |                  | Interbedded Mudstone/<br>Sandstone | as above                                                                                                                 |            |

| Box No. | BCA (°) | Depth       |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                              | Sample No. |
|---------|---------|-------------|----|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From        | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                              |            |
| 11      |         | 31.62-34.43 |    | 2.81                |                     |                  | Bioturbated Mudstone   | sandy throughout                                                                                                                                                                                                                             |            |
| 12      | 23      | 34.43-38.15 |    | 3.72                |                     | 35.7             | Bioturbated Mudstone   | sandy throughout, sand filled burrows 1/2 to 3 cm size                                                                                                                                                                                       |            |
| 12      |         | 38.15-38.25 |    | .10                 |                     | 38.7             | Bioturbated Mudstone   | as above                                                                                                                                                                                                                                     |            |
| 13      | 22      | 38.25-41.00 |    | 2.75                |                     |                  | Bioturbated Mudstone   | as above, sandy at top, very tiny calcite filled burrows                                                                                                                                                                                     |            |
| 14      |         | 41.00-41.08 |    | .08                 |                     |                  | Bioturbated Mudstone   | as above                                                                                                                                                                                                                                     |            |
| 14      |         | 41.08-41.85 |    | .77                 |                     | 41.8             | Bioturbated Mudstone   | calcite stringers on plane parallel to core axis, broken in middle, 1/2 cm thick calcite vein high angle to bedding near middle                                                                                                              |            |
| 14      |         | 41.85-42.10 |    | .25                 |                     |                  | Calcite                | large crystals of calcite (up to 2 cm) and angular brecciated sandstone fragments in lower half, possible displacement of section                                                                                                            |            |
| 14      | 28      | 42.10-43.80 |    | 1.70                |                     |                  | Bioturbated Mudstone   | 3 cm thick calcite vein at unit base, 1 cm thick calcite vein and zone of thin stringers containing angular sandstone fragments 60 cm from base<br>-no apparent displacement of section, 4 cm thick mud/clay (drilling mud?) 30 cm from base |            |
| 15      | 31      | 43.80-46.56 |    | 2.76                |                     | 44.8             | Bioturbated Mudstone   | 3 cm thick calcite vein near top, broken at top, Three-1 cm thick calcite veins within bottom 30 cm, no apparent displacement                                                                                                                |            |

| Box No. | BCA (°)  | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                                                                               | Sample No. |
|---------|----------|-------|-------|---------------------|---------------------|------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To    |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                               |            |
| 16      |          | 46.56 | 47.13 | .57                 |                     |                  | Bioturbated Mudstone           | numerous calcite veins and stringers at high angle to bedding throughout, broken throughout                                                                                                   |            |
| 16      |          | 47.13 | 48.94 | 1.81                |                     | 47.9             | Bioturbated Sandstone/Mudstone | broken at base, few sandstone beds retain sedimentary structures                                                                                                                              |            |
| 16      | 34       | 48.94 | 49.18 | .24                 |                     | 49.7             | Bioturbated Sandstone/Mudstone | as above, contains a large (10 cm thick) irregular calcite infilled breccia zone associated with slickensided sandstone surfaces, no apparent displacement, broken at top                     |            |
| 17      |          | 49.18 | 50.40 | 1.22                |                     |                  | Bioturbated Sandstone/Mudstone | as above, irregular calcite stringers associated with polished surfaces throughout, broken at base and in middle                                                                              |            |
| 17      | 37       | 50.40 | 51.87 | 1.47                |                     | 51.2             | Interbedded Sandstone/Mudstone | cross-laminations in sandstone interbeds indicate overturned beds, 5% sandstone                                                                                                               |            |
| 18      |          | 51.87 | 53.15 | 1.28                |                     |                  | Interbedded Sandstone/Mudstone | 50% sandstone, cross laminations and burrows indicate that the beds are overturned                                                                                                            |            |
| 18      | 28<br>25 | 53.15 | 54.72 | 1.57                |                     | 53.9             | Interbedded Sandstone/Mudstone | 70% sandstone, 2 cm thick calcite vein 60 cm from bottom parallel to bedding, well developed overturned and truncated cross-beds                                                              |            |
| 19      |          | 54.72 | 56.30 | 1.58                |                     |                  | Interbedded Sandstone/Mudstone | interbeds are roughly 20 cm thick, calcite healed breccia zone 40 cm from top with broken core, little apparent displacement, apparent core loss, 70% sandstone, mudstone is well bioturbated |            |

| Box No. | BCA (°)  | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                                                                                                                                                                                                   | Sample No. |
|---------|----------|-------|-------|--------------------|--------------------|------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To    |                    |                    |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                   |            |
| 19      | 25       | 56.30 | 57.52 | 1.22               |                    | 57.0             | Sandstone                      | with bioturbated sandy mudstone interbeds, well developed growth crystal rosettes, pyrite mineralization on joint plane perpendicular to bedding, occasional calcite stringers throughout oriented at high angle to bedding, broken in middle, occasional polished surfaces, overturned                           |            |
| 20      |          | 57.52 | 57.75 | .23                |                    |                  | Sandstone                      | as above, overturned                                                                                                                                                                                                                                                                                              |            |
| 20      | 28       | 57.75 | 58.86 | 1.11               |                    |                  | Bioturbated Mudstone           | somewhat sandy, broken and ground at top (core loss), occasional calcite stringers at high angle to bedding, overturned                                                                                                                                                                                           |            |
| 20      |          | 58.86 | 59.19 | .33                |                    |                  | Interbedded Sandstone/Mudstone | 80% sandstone, thin calcite stringers at high angle associated "mirror" polished surface parallel to bedding, overturned                                                                                                                                                                                          |            |
| 20      |          | 59.19 | 60.12 | .93                |                    | 60.0             | Interbedded Sandstone/Mudstone | as above with planar polished surfaces and calcite stringers broken near base through a 4 cm thick irregular calcite nodule, core loss overturned                                                                                                                                                                 |            |
| 21      | 32<br>55 | 60.12 | 61.71 | 1.59               |                    |                  | Interbedded Sandstone/Mudstone | cross-beds indicate overturned beds, micro-faults (cm displacement), calcite associated with polished surfaces throughout both parallel and perpendicular to bedding, BCA at top is 32° and BCA at base is 55°, BCA in middle is 0° (vertical beds), occasional growth crystals throughout, broken, 80% sandstone |            |

| Box No. | BCA (°)  | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION             |                                                                                                                                                                             | Sample No. |
|---------|----------|-------|-------|---------------------|---------------------|------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To    |                     |                     |                  | MAIN                               | Amplified (Include Coal Recovery for Each Seam)                                                                                                                             |            |
| 21      |          | 61.71 | 62.21 | .50                 |                     | 62.5             | Interbedded Sandstone/<br>Mudstone | as above, ground at top, broken in middle and lower half, 2 cm thick calcite vein in broken pieces at base                                                                  |            |
| 21      | 52       | 62.21 | 62.73 | .52                 |                     | 63.1             | Interbedded Sandstone/<br>Mudstone | as above, ground at top, numerous calcite stringers, well developed overturned cross-beds and burrows                                                                       |            |
| 22      | 44<br>25 | 62.73 | 64.65 | 1.92                |                     |                  | Sandstone                          | mudstone interbeds at top, calcite stringers and microfaults throughout, broken in middle, planar polished surfaces, well developed cross beds (overturned) and laminations |            |
| 22      | 25       | 64.65 | 65.34 | .69                 |                     | 65.5             | Sandstone                          | as above, overturned                                                                                                                                                        |            |
| 23      | 10       | 65.34 | 67.75 | 2.41                |                     |                  | Sandstone                          | as above, broken at base and in middle, overturned                                                                                                                          |            |
| 23      | 15       | 67.75 | 67.94 | .19                 |                     | 68.6             | Sandstone                          | as above, overturned                                                                                                                                                        |            |
| 24      | 0        | 67.94 | 70.84 | 2.90                |                     |                  | Sandstone                          | as above except few calcite stringers perpendicular to bedding, broken in middle, small growth crystals at base                                                             |            |
| 25      | 20<br>25 | 70.84 | 72.45 | 1.61                |                     | 71.8             | Sandstone                          | as above, few calcite stringers, disseminated pyrite in places, cross-beds, burrows and graded bedding indicate that rock is right way up                                   |            |
| 25      | 23<br>18 | 72.45 | 73.61 | 1.16                |                     | 73.61            | Sandstone                          | as above                                                                                                                                                                    |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                |            |
| 26      | 25      | 73.61 | 74.29 | .68                |                    |                  | Sandstone              | as above, rightway up, occasional sandy mudstone interbeds with tiny "speckled" burrows                                        |            |
| 26      | 20      | 74.29 | 76.29 | 2.00               |                    | 75.3             | Sandstone              | as above, occasional calcite stringers perpendicular to bedding, thin calcite vein parallel to bedding, broken in large pieces |            |
| 27      | 33      | 76.29 | 77.31 | 1.02               |                    |                  | Sandstone              | as above, right way up                                                                                                         |            |
| 27      |         |       | 77.31 |                    |                    | 78.3             |                        | END OF HOLE                                                                                                                    |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                                                                                    |                                                                                                                                                                                                                                                | Sample No.                           |
|---------|---------|--------|--------|--------------------|--------------------|------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
|         |         | From   | To     |                    |                    |                  | MAIN                                                                                                                      | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                |                                      |
| 47      |         | 130.54 | 131.65 | 1.11               |                    |                  | Sandstone                                                                                                                 | medium light grey, mottled no sedimentary structures argillaceous planar joint surfaces parallel to core axis throughout, upper half contains numerous thick stringers of soft (Hl), white, soapy, non-carbonaceous mineral? and micro-breccia | Sampled White Mineral .56 m from top |
| 47      |         | 131.65 | 132.07 | .42                |                    |                  | Carbonaceous Mudstone                                                                                                     | very coaly in places, planar shear surfaces approximately 45° to bedding, mineralization of soft siderite/or mineral in above unit on shearplanes                                                                                              |                                      |
| 47      |         | 132.07 | 132.14 | .07                | 133.2              |                  | Coaly, Mudstone                                                                                                           |                                                                                                                                                                                                                                                | Kilby                                |
| 47      |         | 132.14 | 132.17 | .03                |                    | Ash Band #9      |                                                                                                                           |                                                                                                                                                                                                                                                |                                      |
|         |         | 132.17 | 132.52 | .35                |                    | Lost Core        |                                                                                                                           |                                                                                                                                                                                                                                                |                                      |
|         |         | 132.52 | 132.84 | .32                |                    | Lost Coal        |                                                                                                                           |                                                                                                                                                                                                                                                |                                      |
| 47      |         | 132.84 | 132.89 | .05                |                    | Coal             | dull, muddy, sheared, broken, white mineralization throughout on shear faces (*sampled white mineral)                     | *                                                                                                                                                                                                                                              |                                      |
| 48      |         | 132.89 | 132.98 | .09                |                    | Coaly Mudstone   | broken at top                                                                                                             |                                                                                                                                                                                                                                                |                                      |
| 48      |         | 132.98 | 133.55 | .57                |                    | Coal             | dull, sheared, bright stringers, broken near base                                                                         |                                                                                                                                                                                                                                                |                                      |
| 48      |         | 133.55 | 133.87 | .32                |                    | Coal             | dull, muddy looking, grainy or frothy (a little like Pigs Nose coal), calcite throughout the coal gives muddy appearance  |                                                                                                                                                                                                                                                |                                      |
|         |         |        |        |                    |                    | SAMPLE           | Seam 3 Ply I 132.98 - 133.87 meter interval                                                                               | Bulk Maceral                                                                                                                                                                                                                                   |                                      |
| 48      |         | 133.87 | 133.94 | .07                |                    | Calcite Zone     | dark brown, coaly at top and bottom, a cemented brecciated texture in places, very calcareous (calcite healed gouge zone) |                                                                                                                                                                                                                                                |                                      |
|         |         | 133.94 | 134.02 | .08                |                    | Lost Core        |                                                                                                                           |                                                                                                                                                                                                                                                |                                      |



| Box No. | BCA (°)           | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                         | Sample No.     |
|---------|-------------------|---------------|----|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|         |                   | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                         |                |
| 48      |                   | 134.02-134.33 |    | .31                 |                     |                  | Coal                   | dull with bright bands, sheared, easily broken, broken, powdered in places                                                                                                                                                                                                                                              | VIT #8 ✓       |
|         |                   | 134.33-134.79 |    | .46                 |                     |                  | Lost Coal              |                                                                                                                                                                                                                                                                                                                         |                |
|         |                   |               |    |                     |                     |                  | SAMPLE                 | seam 3, Ply II 134.02 - 134.79 meter interval                                                                                                                                                                                                                                                                           | Bulk Maceral ✓ |
| 48      |                   | 134.79-135.03 |    | .24                 |                     |                  | Mudstone               | medium dark grey, carbonaceous, carbonaceous plant fragments, slightly silty, soft white mineral lining fracture planes at low angle to core axis                                                                                                                                                                       |                |
| 48      |                   | 135.03-135.79 |    | .76                 |                     | 135.8            | Mudstone               | as above with few carbonaceous plant fragments, silty, planar fractures at 45° to core axis (lined with the mystery mineral)                                                                                                                                                                                            |                |
| 49      |                   | 135.79-136.85 |    | 1.06                |                     |                  | Mudstone               | medium gray, silty throughout, very silty at top, rare coaly and/or carbonaceous plant fragments, crackly fracture throughout, broken in places near bottom, polished surfaces and soft mineral mineralization                                                                                                          |                |
| 49      | 65°               | 136.85-138.19 |    | 1.34                |                     | 137.9            | Sandstone              | fine grained, medium gray, slightly carbonaceous at bottom-more so towards top, diffuse thick laminations roughly parallel, grades finer at top, upper 10 cm grades through siltstone-mudstone,                                                                                                                         |                |
| 50      |                   | 138.19-138.32 |    | 0.13                |                     |                  | Sandstone              | as bottom of above unit                                                                                                                                                                                                                                                                                                 |                |
| 50      | 55°<br>60°<br>55° | 138.32-140.62 |    | 2.30                |                     | 139.3            | Sandstone              | as above with low angle cross laminations (right way up), low angle cross-beds of 5 cm scale, occasional planar fracture surfaces perpendicular to bedding, also planar fractures occasionally parallel to bedding with Calcite Mineralization, "dirtier" and "cleaner" sandstones interbed on a scale 5 to 20 cm thick |                |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                           | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                           |            |
| 51      |         | 140.62 | 142.43 | 1.81               |                    |                  | Sandstone               | as above, grain size ranges from upper to lower fine grained,                                                                                                                                                             |            |
| 51      |         | 142.43 | 143.13 | 0.70               |                    | 142.3            | Sandstone               | as above, [these sandstones all react vigorously to HCl (10%) as does the calcite lining fracture planes]                                                                                                                 |            |
| 52      |         | 144.22 | 145.21 | .99                |                    | 145.4            | Sandstone               | as above, at 45 cm from bottom is a dark gray argillaceous interbed--just above it are numerous argillaceous intraclasts within the lighter colored sandstones of the unit                                                |            |
| 52      |         | 145.21 | 145.67 | .46                |                    | 146.3            | Sandstone               | as above                                                                                                                                                                                                                  |            |
| 53      | 65°     | 145.67 | 147.27 | 1.6                |                    |                  | Sandstone               | as above, up to lower medium grain size, common carbonaceous laminae, sharp erosional bottom contact with argillaceous sandstone below, argillaceous intraclasts throughout bottom 15 cm, large coaly stringers near base |            |
| 53      |         | 147.27 | 147.77 | .50                |                    | 148.4            | Sandstone               | as above, grades to very argillaceous at top                                                                                                                                                                              |            |
| 53      |         | 147.77 | 148.37 | .60                |                    |                  | Mudstone                | silty throughout, 10 cm thick sandstone interbed 20 cm from bottom, carbonaceous medium dark grey, polished surfaces parallel to bedding, zone of irregular calcite stringers at moderate angle to bedding in upper 20 cm |            |
| 54      |         | 148.37 | 150.31 | 1.94               |                    |                  | Siltstone/<br>Sandstone | thinly interbedded, often laminated, sometimes mottled, rooted and minor bioturbated texture, common calcite lined fractures parallel to bedding, carbonaceous laminae                                                    |            |
|         |         | 150.31 | 151.09 | .78                |                    |                  | Lost Core               |                                                                                                                                                                                                                           |            |
| 54      |         | 151.09 | 151.84 | .75                |                    | 151.5            | Siltstone/<br>Sandstone | as above, numerous calcite stringers perpendicular to bedding at base                                                                                                                                                     |            |
| 55      |         | 151.84 | 154.12 | 2.28               |                    |                  | Siltstone/<br>Sandstone | as above                                                                                                                                                                                                                  |            |

| Box No. | BCA (°)    | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                           | Sample No. |
|---------|------------|--------|--------|--------------------|--------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                           |            |
| 55      |            | 154.12 | 154.53 | .41                |                    | 154.5            | Siltstone/<br>Sandstone | as above                                                                                                                                                                                                                                                                                                  |            |
| 56      |            | 154.53 | 154.98 | .45                |                    |                  | Mudstone/<br>Siltstone  | thinly interbedded, carbonaceous, carbonaceous plant fragments                                                                                                                                                                                                                                            |            |
| 56      |            | 154.98 | 157.01 | 2.03               |                    |                  | Sandstone               | 20 cm thick interbeds of fine and upper fine grained sandstone, 15 cm thick muddy carbonaceous band in center, lower half has numerous calcite stringers parallel and perpendicular to bedding especially just below middle, sandstone has carbonaceous laminae throughout, majority is medium light grey |            |
| 57      | 48°<br>58° | 157.01 | 159.07 | 2.06               |                    | 157.6            | Sandstone               | as above, contains muddy intraclast horizons in lower half, occasional coaly stringers, calcite crystals lining open fracture                                                                                                                                                                             |            |
| 57      |            | 159.07 | 159.88 | .81                |                    |                  | Siltstone               | thin interbeds and laminations of fine grained sandstone, carbonaceous throughout, medium dark grey                                                                                                                                                                                                       |            |
| 58      |            | 159.88 | 160.02 | .14                |                    |                  | Siltstone               | carbonaceous, medium dark grey                                                                                                                                                                                                                                                                            |            |
| 58      |            | 160.02 | 162.54 | 2.52               |                    | 160.6            | Mudstone                | dark grey, carbonaceous, occasional coaly fragments, rare pyrite nodule, scattered carbonaceous plant fragment horizons, very silty at top                                                                                                                                                                |            |
| 59      |            | 162.54 | 163.00 | .46                |                    |                  | Mudstone                | very carbonaceous with coaly wisps throughout, occasional coaly lenses, minute calcite wisps are the visible expression in the core of numerous shear surfaces at 45° to core axis, broken in large pieces                                                                                                |            |
| 59      |            | 163.00 | 164.49 | 1.49               |                    | 163.7            | Siltstone               | very muddy at top, sandy at base, carbonaceous, coaly stringers, abundant carbonaceous plant fragments throughout, rooted and mottled, numerous shear planes at 45° to bedding, cm thick calcite band 25 cm from base is very sheared with sideritic? and calcite mineralization, broken in large pieces  |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                          | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                          |            |
| 59      |         | 164.49 | 164.65 | .16                |                    |                  | Mudstone               | carbonaceous, coaly wisps and thin bands throughout, broken pieces of bright coal at top                                                                                                                                                                                                 | VIT 9 ✓    |
| 59      |         | 164.65 | 164.69 | .04                |                    |                  | Coal Powder            | also small mudstone pieces                                                                                                                                                                                                                                                               |            |
| 59      |         | 164.69 | 164.80 | .11                |                    |                  | Ash Band #10           | very muddy, carbonaceous plant fragments, medium dark grey, relatively hard                                                                                                                                                                                                              | Kilby # 10 |
| 59      |         | 164.80 | 164.83 | .03                |                    |                  | Coal Powder            | dull and bright                                                                                                                                                                                                                                                                          | VIT 9      |
|         |         | 164.83 | 164.87 | .04                |                    |                  | Lost Core              | likely coaly                                                                                                                                                                                                                                                                             |            |
| 59      |         | 164.87 | 164.94 | .07                |                    |                  | Mudstone               | dark grey, coaly, highly broken into small pieces                                                                                                                                                                                                                                        |            |
| 59      |         | 164.94 | 165.02 | .08                |                    |                  | Mudstone/<br>Coal      | powdered and highly broken into small pieces                                                                                                                                                                                                                                             |            |
| 59      |         | 165.02 | 165.10 | .08                |                    |                  | Mudstone               | dark grey, carbonaceous, coaly                                                                                                                                                                                                                                                           |            |
| 60      |         | 165.10 | 165.22 | .12                |                    |                  | Mudstone               | as above, broken                                                                                                                                                                                                                                                                         |            |
| 60      | 45°     | 165.22 | 167.73 | 2.51               |                    | 167.0            | Mudstone               | thin silty interbeds, rarely sandy, carbonaceous, carbonaceous plant fragments throughout, thin coal bands common, calcite wisps parallel to bedding common, medium dark grey, concretions in center, polished surfaces parallel to bedding and at low angle to core axis, silts at base |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                           |            |
| 61      |         | 167.73 | 168.13 | .40                |                    |                  | Siltstone              | muddy bands, medium dark grey                                                                                                                                                                                                             |            |
| 61      |         | 168.13 | 169.53 | 1.40               |                    | 169.4            | Mudstone               | silty at top, carbonaceous, very coaly in center, lower 50 cm contains millions of very tiny calcite filled burrows giving core a speckled appearance-generally occurring in convolute bands, irregular silty nodules in bottom 20 cm     |            |
| 61      |         | 169.53 | 170.48 | .95                |                    |                  | Siltstone              | medium grey, muddy at top, sandy at base, rare plant fragments, occasional roots, broken in large pieces, thin cross-laminated sandstone interbeds in bottom third                                                                        |            |
| 62      | 75°     | 170.48 | 171.05 | .57                |                    |                  | Sandstone              | to upper fine grained, silty at top, medium light to medium grey color, sharp bottom contact, muddy laminae at base, broken at top                                                                                                        |            |
| 62      |         | 171.05 | 171.29 | .24                |                    |                  | Mudstone               | dark grey and silty, rare plant fragments                                                                                                                                                                                                 |            |
| 62      |         | 171.29 | 173.69 | 2.40               |                    | 172.4            | Mudstone               | silty in places and gradational interbeds, occasional carbonaceous plant fragments, medium dark grey                                                                                                                                      |            |
| 63      |         | 173.69 | 174.65 | .96                |                    |                  | Mudstone               | silty at top, 15 cm coaly mudstone bands 30 and 45 cm from bottom, broken in a number of places                                                                                                                                           |            |
| 63      |         | 174.65 | 176.25 | 1.60               |                    | 175.9            | Sandstone              | very fine grained, gradational from siltstone at top to fine grained at bottom, carbonaceous plant fragments throughout, occasional coaly stringers, occasional calcite lined fractures at low angle to core axis and subparallel bedding |            |

| Box No. | BCA (°)    | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                  | Sample No. |
|---------|------------|--------|--------|--------------------|--------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                  |            |
| 64      |            | 176.25 | 177.76 | 1.51               |                    |                  | Sandstone               | thin silty interbeds, medium grey, rare plant fragments, common roots, low-angle cross-laminations, mottled in places, up to upper fine grained (usually finer)                                                                                                                  |            |
| 64      | 75°        | 177.76 | 178.93 | 1.17               |                    | 178.9            | Sandstone               | as above, numerous calcite stringers and polished shear surfaces parallel to bedding, low-angle cross-laminations (right way up), occasionally bioturbation/burrows                                                                                                              |            |
| 65      |            | 178.93 | 180.83 | 1.90               |                    |                  | Sandstone               | as above, 20 cm carbonaceous mudstone 30 cm from top, occasional thin calcite stringers subparallel to bedding                                                                                                                                                                   |            |
| 65      |            | 180.83 | 181.15 | .32                |                    | 182.9            | Sandstone               | as above                                                                                                                                                                                                                                                                         |            |
| 65      |            | 181.15 | 181.53 | .38                |                    |                  | Sandstone/<br>Siltstone | mottled texture, medium dark grey to medium light grey, numerous calcite stringers and calcite wisps parallel to bedding                                                                                                                                                         |            |
| 66      | 50°<br>40° | 181.53 | 183.94 | 2.41               |                    |                  | Sandstone               | to medium fine grained with numerous silty interbeds and laminations, BCA of 50° at top and 40° at bottom, carbonaceous plant fragments (on bedding surfaces) throughout, root structures, occasional coaly stringers, occasional bioturbate texture, two calcite stringer zones |            |
| 66      |            | 183.94 | 184.24 | .30                |                    | 185.0            | Sandstone               | as above                                                                                                                                                                                                                                                                         |            |
| 67      |            | 184.24 | 186.98 | 2.74               |                    |                  | Sandstone               | as above, muddy siltstone interbeds up to 30 cm thick, BCA 45° at top, 30° one meter from base, and 45° at base, calcite stringer zones 0.9 m, 1.4 m and 1.9 m from base with polished and slickensided surfaces                                                                 |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                    | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                    |            |
| 68      |         | 186.98 | 189.67 | 2.69               |                    | 188.1            | Sandstone/Siltstone    | interbedded and interlaminated, small scale cross-beds and laminations, often churned, occasional burrows, roots, coaly stringers, calcite wisps parallel to bedding in bottom half, 3 cm thick calcite stringer/coaly band at top | VIT #10 ✓  |
| 69      |         | 189.67 | 189.99 | .32                |                    |                  | Siltstone/Sandstone    | as above                                                                                                                                                                                                                           |            |
| 69      |         | 189.99 | 192.39 | 2.40               |                    | 191.1            | Siltstone/Mudstone     | with thin sandstone interbeds especially in top half, bioturbated throughout, some sandstones retain laminated structures, occasional carbonaceous plant fragments, calcite wisps parallel to bedding, predominantly muddy at base |            |
| 70      |         | 192.39 | 192.71 | .32                |                    |                  | Siltstone/Mudstone     | silty at top, muddy at bottom, thin coal stringers near base                                                                                                                                                                       |            |
| 70      |         | 192.71 | 192.83 | .12                |                    |                  | Carbonaceous Mudstone  | grades downwards to coaly mudstone, very ground and broken                                                                                                                                                                         |            |
|         |         | 192.83 | 193.82 | .99                |                    |                  | Lost Mudstone          | cumulative-between 192.71meters and 194.26 meters- some may be coaly                                                                                                                                                               |            |
| 70      |         | 193.82 | 193.93 | .11                |                    | 194.2            | Coal                   | dull banded, very broken, bright bands up to 1 cm thick                                                                                                                                                                            |            |
| 70      |         | 193.93 | 193.98 | .05                |                    |                  | Coaly Mudstone         |                                                                                                                                                                                                                                    |            |
| 70      |         | 193.98 | 194.22 | .24                |                    |                  | Mudstone               | carbonaceous with coaly stringers, 1 cm thick bright coal band 5 cm from base, polished surfaces throughout, zone of calcite stringers in middle, moderately broken, very broken at base-possible core loss, bottom 6 cm is coaly  |            |
| 70      |         | 194.22 | 194.26 | .04                |                    |                  | Coal                   | dull banded, pearly shean                                                                                                                                                                                                          |            |
| 70      |         | 194.26 | 196.00 | 1.74               |                    |                  | Siltstone              | sandy/muddy in places, occasional carbonaceous plant fragments and coaly stringers, mottled texture, polished surfaces parallel bedding, broken coaly band 30 cm from base-possible core loss, zone of calcite stringers near base |            |

| Box No. | BCA (°)    | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sample No. |
|---------|------------|--------|--------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 71      |            | 196.00 | 196.71 | .71                |                    |                  | Siltstone              | as above                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| 71      |            | 196.71 | 197.09 | .38                |                    | 197.2            | Mudstone               | silty towards base, medium dark gray, coaly plant fragments, polished surfaces, broken in middle.                                                                                                                                                                                                                                                                                                                                                               |            |
|         | 65°<br>67° | 197.09 | 198.77 | 1.68               |                    |                  | Sandstone              | medium gray, thin muddy interbeds throughout, sandstones to upper fine grain size, rootlets generally mottled and bioturbated, cross laminated in same thin interbeds, one-twenty cm sandstone 80 cm from base is cleaner and has carbonaceous laminations, cross laminations and has a sharp lower contact with underlying mudstone interbed. Minor calcite stringers in middle, coalified wood fragments, carbonaceous plant fragments in mudstone interbeds. |            |
| 72      | 55°        | 198.77 | 199.79 | 1.02               |                    |                  | Sandstone              | as above, calcite wisps in top 20 cm                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
|         |            | 199.79 | 200.25 | .46                |                    | 200.3            | Sandstone              | as above                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| 72      | 64°        | 200.25 | 201.37 | 1.12               |                    |                  | Silty Mudstone         | with thin sandstone interbeds, gradational with upper unit as there is a 15 cm thick siltstone interbed at top, bioturbated and churned, rootlets, occasional sandy lamination, coalified plant remains, pyrite flecks, predominant calcite wisps and stringers associated with mudstones, are parallel to bedding (obvious zone of shearing) slickensides and polished surfaces                                                                                |            |
| 73      | 62°<br>55° | 201.37 | 201.90 | .53                |                    |                  | Silty Mudstone         | as above, towards base sandstone interbeds become more dominant, gradational basal contact                                                                                                                                                                                                                                                                                                                                                                      |            |
| 73      | 53°<br>38° | 201.90 | 202.88 | .98                |                    |                  | Sandstone              | medium gray color, very fine grained, thin muddy interlaminations in top half, roots, burrows, moderately bioturbated (burrows of 1 cm diameter scale), numerous calcite stringers parallel bedding, BCA 53° at top-progressing to 38° at bottom                                                                                                                                                                                                                |            |



| Box No. | BCA (°)    | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|------------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                     |                     |                  | MAIN                   | Amplified<br>(Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                      |            |
| 73      | 40°<br>0°  | 202.88 | 203.96 | 1.08                |                     | 203.3            | Sandstone              | as above, very broken at top, bedding is vertical in bottom half, 40° in top half, wispy calcite and calcite stringers parallel bedding especially in muddy and/or carbonaceous laminae.                                                                                                                                                                                                                |            |
| 74      | 20°<br>25° | 203.96 | 205.97 | 2.01                |                     |                  | Siltstone              | medium dark gray, muddy throughout with thin interbeds of carbonaceous mudstone, sheared throughout creating polished surfaces-often lined with calcite and disseminated pyrite-at low angle to core axis, numerous wispy calcite stringer zones occur throughout-subparallel to bedding surfaces, bedding is at low angles to the core axis, mottled throughout-although occasional laminations remain |            |
| 74      |            | 205.97 | 206.69 | .72                 |                     | 206.3            | Siltstone              | very muddy, carbonaceous, otherwise as above, rare coaly stringers                                                                                                                                                                                                                                                                                                                                      |            |
| 75      |            | 206.69 | 207.91 | 1.22                |                     |                  | Siltstone              | very muddy, as above, very broken in upper half, thin coaly stringers in places                                                                                                                                                                                                                                                                                                                         |            |
| 75      | 10°        | 207.91 | 209.01 | 1.10                |                     | 208.2            | Siltstone              | as above with numerous carbonaceous plant fragments, rooted and somewhat mottled, occasional concretion, polished surfaces at high angle to bedding, core axis at low angle to bedding surfaces-defined by sandy laminations                                                                                                                                                                            |            |
| 75      |            | 209.01 | 209.23 | .22                 |                     | 209.4            | Siltstone              | as above                                                                                                                                                                                                                                                                                                                                                                                                |            |
| 76      | 25°<br>35° | 209.23 | 211.93 | 2.70                |                     |                  | Sandstone              | with thin silty and muddy interbeds, sandstone to medium fine grain size, high angle cross-laminations are evident despite mottling from roots, bioturbation and microfaulting at high angles to bedding, occasional calcite wisps and stringers both parallel and perpendicular to bedding.                                                                                                            |            |
| 77      |            | 211.93 | 214.69 | 2.76                |                     | 212.4            | Sandstone              | very fine grained, upper fine grained near centre and bottom 60 cm, in places where mottling is not complete-laminations are evident, quite carbonaceous throughout with carbonaceous plant fragments common, roots are very common towards the bottom, tiny "horizontal" burrow paths throughout the middle,                                                                                           |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                        | Sample No.      |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                        |                 |
| 78      | 65°     | 214.69 | 215.01 | .32                 |                     |                  | Sandstone              | broken in large pieces, calcite lined polished surfaces, BCA's steepen somewhat.<br>as above                                                                                                                                                                           |                 |
| 78      | 65°     | 215.01 | 216.11 | 1.10                | 215.5               |                  | Siltstone              | carbonaceous, medium dark gray, carbonaceous and coaly plant fragments on bedding surfaces, progressively muddier towards base, tiny calcite wisps through bottom half-roughly parallel to bedding                                                                     |                 |
| 78      |         | 216.11 | 216.74 | .63                 |                     |                  | Mudstone               | dark gray, carbonaceous, coaly throughout with coal bands to cm scale, broken throughout especially near base, calcite lined polished fracture surfaces contains 2-0.18 meter partings, 1.73 m true thickness, NO RECOVERY                                             |                 |
|         |         | 216.74 | 218.62 | 1.88                |                     |                  | Lost Coal              |                                                                                                                                                                                                                                                                        |                 |
|         |         | 218.62 | 218.69 | .07                 |                     |                  | Lost Mudstone          |                                                                                                                                                                                                                                                                        |                 |
| 78      |         | 218.69 | 218.86 | .17                 | 218.5               |                  | Mudstone               | as above, broken throughout, ground pieces, upper 5 cm are small fragments containing some bright coal bands and numerous coal pieces (GSC sample)                                                                                                                     | VIT 11<br>GSC ✓ |
| 78      |         | 218.86 | 219.01 | .15                 |                     |                  | Concretion Band        | medium gray, very hard, relatively very dense, bottom 5 cm broken in angular fragments and healed with calcite                                                                                                                                                         |                 |
| 79      |         | 219.01 | 219.40 | .39                 |                     |                  | Concretion Band        | as above, calcite healed zone at top, 5 cm mudstone 25 cm from base, bottom 20 cm riddled with irregular thin calcite stringers, also plentiful carbonaceous plant fragments in bottom 20 cm, no plant fragments in upper 14 cm, mirror plane polished surface at base |                 |
| 79      | 40°     | 219.40 | 220.80 | 1.40                | 219.8               |                  | Mudstone               | dark gray, carbonaceous with abundant plant fragments and coaly stringers, numerous polished mirror surfaces                                                                                                                                                           |                 |
| 79      |         | 220.80 | 221.30 | .50                 | 221.6               |                  | Mudstone               | as above                                                                                                                                                                                                                                                               |                 |

| Box No. | BCA (°)    | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                      | Sample No. |
|---------|------------|--------|--------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                      |            |
| 80      |            | 221.30 | 221.75 | .45                 |                     |                  | Mudstone               | as above, sheared throughout, broken in top 30 cm, broken into small pieces and powder in bottom 15 cm, 5 cm thick concretionary band 20 cm from top | VIT 12 ✓   |
| 80      | 65°<br>70° | 221.75 | 221.98 | .23                 | 223.1               |                  | Mudstone               | dark gray, carbonaceous and coaly, silty interbeds                                                                                                   |            |
| 80      |            | 221.98 | 222.03 | .05                 |                     |                  | Coal                   | broken, bright and lustrous pieces, polished surfaces                                                                                                |            |
| 80      |            | 222.03 | 222.30 | .27                 |                     |                  | Coaly Mudstone         | with bright bands to 3 cm thick, broken coaly zone in center                                                                                         |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                          |                                                                                                                                                                                                                                                            | Sample No. |                |                                           |
|---------|---------|---------------|----|---------------------|---------------------|------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------|-------------------------------------------|
|         |         | From          | To |                     |                     |                  | MAIN                                                            | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                            |            |                |                                           |
| 80      |         | 222.30-222.54 |    | .24                 |                     |                  | Mudstone<br>Lost Core                                           | medium dark gray, carbonaceous, highly polished surfaces throughout, broken cumulative - of 2.67 m of lost core between 219.40 m and 226.00 m is 1.16 m of coal in thinbeds each less than 25 cm thick (Coal Recovery = 8%)<br>(Interval Recovery = 59.5%) |            |                |                                           |
|         |         | 222.54-225.21 |    | 2.67                |                     |                  |                                                                 |                                                                                                                                                                                                                                                            |            |                |                                           |
|         |         | 225.21-225.36 |    | .15                 |                     |                  |                                                                 |                                                                                                                                                                                                                                                            |            | Coaly Mudstone | broken                                    |
|         |         | 225.36-225.53 |    | .17                 |                     |                  |                                                                 |                                                                                                                                                                                                                                                            |            | Mudstone       | coaly at base                             |
|         |         | 225.53-225.58 |    | .05                 |                     |                  |                                                                 |                                                                                                                                                                                                                                                            |            | Coal           | powder with tiny coaly mudstone fragments |
|         |         | 225.58-226.00 |    | .42                 | 224.6               | Mudstone         | carbonaceous, occasional coaly stringers, silty at base         |                                                                                                                                                                                                                                                            |            |                |                                           |
| 80      |         | 226.00-226.11 |    | .11                 |                     | Sandstone        | fine grained, carbonaceous, muddy in places, mottled throughout |                                                                                                                                                                                                                                                            |            |                |                                           |
| 81      |         | 226.11-226.26 |    | .15                 |                     |                  | Sandstone                                                       | as above, lower 5 cm very broken with numerous mudstone fragments                                                                                                                                                                                          |            |                |                                           |
|         |         | 226.26-227.95 |    | 1.69                |                     |                  |                                                                 |                                                                                                                                                                                                                                                            |            | 226.0          | Siltstone                                 |
| 81      |         | 227.95-228.00 |    | .05                 |                     | 227.7            | Siltstone                                                       | as above but with numerous calcite lined fractures at low angle to bedding                                                                                                                                                                                 |            |                |                                           |
| 82      | 55°     | 228.00-229.00 |    | 1.00                |                     |                  | Siltstone                                                       | as above with fewer carbonaceous plant fragments, occasional calcite lined burrow zones                                                                                                                                                                    |            |                |                                           |
|         |         | 229.00-230.43 |    | 1.43                |                     |                  | Sandstone                                                       | to upper fine grain size, interbedded and interlaminated with mudstone/siltstone, carbonaceous horizons and coaly stringers, broken at base                                                                                                                |            |                |                                           |
|         |         | 230.43-230.49 |    | .06                 |                     |                  | Lost Core                                                       |                                                                                                                                                                                                                                                            |            |                |                                           |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                  | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                  |            |
|         |         | 230.49 | 230.62 | .13                |                    | 230.7            | Sandstone              | as above with numerous intraclasts of unit below, sharp-irregular basal contact                                                                                                                  | 1/4 Kirby  |
| 82      |         | 230.62 | 230.84 | .22                |                    |                  | Mudstone               | dark gray, carbonaceous, coaly wisps throughout                                                                                                                                                  |            |
| 83      |         | 230.84 | 231.10 | .26                |                    |                  | Mudstone               | as above                                                                                                                                                                                         |            |
| 83      |         | 231.10 | 231.20 | .10                |                    |                  | Ash Band #11           |                                                                                                                                                                                                  |            |
|         |         | 231.20 | 232.19 | .99                |                    |                  | Siltstone              | interbedded with fine grained sandstone, very muddy at top, sandy at base, upper 5 cm is very broken containing many coal fragments and powder                                                   |            |
| 83      | 55°     | 232.19 | 233.48 | 1.29               |                    |                  | Sandstone              | very fine grained, interbedded with muddy siltstone, thinly crossbedded, cross laminated, carbonaceous                                                                                           |            |
| 84      |         | 233.48 | 235.28 | 1.80               |                    |                  | Sandstone              | as above, grain size to medium fine, very broken 40 cm from base                                                                                                                                 |            |
| 84      | 40°     | 235.28 | 236.15 | .87                |                    | 236.2            | Sandstone              | as above, ground at top, occasional calcite stringers parallel to bedding                                                                                                                        |            |
| 85      | 42°     | 236.15 | 238.4  | 2.25               |                    |                  | Sandstone              | as above, interbeds are thicker - 5 to 35 cm thick, calcite and/or pyrite mineralization on fractures both perpendicular and parallel to bedding, numerous polished surfaces parallel to bedding |            |
| 85      |         | 238.4  | 238.93 | .53                |                    | 239.3            | Sandstone              | as above                                                                                                                                                                                         |            |
| 86      |         | 238.93 | 241.44 | 2.51               |                    |                  | Sandstone              | very fine with fine grained interbeds and interlaminations, form fining upwards cycles roughly 70 cm thick                                                                                       |            |
| 86      |         | 241.44 | 241.59 | .15                |                    | 242.3            | Sandstone              | as above, broken near base                                                                                                                                                                       |            |

| Box No. | BCA (°)                        | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                           | Sample No. |
|---------|--------------------------------|--------|--------|---------------------|---------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                                | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                           |            |
| 87      | 55°<br>35°<br>52°              | 241.59 | 244.35 | 2.76                |                     |                  | Sandstone/<br>Siltstone | thinly interbedded fine grain sandstone and dark siltstone, carbonaceous, occasional coal stringers and common zones of calcite wisps and stringers parallel to bedding, broken 60 cm from base, numerous polished surfaces associated with the calcite                                                   |            |
| 88      |                                | 244.35 | 244.53 | .18                 |                     |                  | Sandstone/<br>Siltstone | as above                                                                                                                                                                                                                                                                                                  |            |
| 88      |                                | 244.53 | 246.63 | 2.1                 |                     | 245.7            | Siltstone               | medium dark gray, muddy throughout, concretions containing pyrite near middle                                                                                                                                                                                                                             |            |
| 88      |                                | 246.63 | 246.85 | .22                 |                     | 247.8            | Siltstone               | as above, occasional polished surfaces                                                                                                                                                                                                                                                                    |            |
| 89      | 40°                            | 246.85 | 249.40 | 2.55                |                     |                  | Siltstone               | medium gray, mottled in places, laminated in others, calcite wisps parallel bedding in upper half, calcite stringers common on vertical fracture planes and perpendicular to bedding, sandy through bottom meter, broken in large pieces throughout with some core loss - very broken near top and bottom |            |
| 90      | 30°                            | 249.40 | 249.55 | .15                 |                     |                  | Sandstone               | fine grained medium gray sandstone, carbonaceous and rooted, polished surfaces throughout - also irregular calcite stringers throughout                                                                                                                                                                   |            |
| 90      | 30°<br>0°<br>30°<br>0°         | 249.55 | 250.77 | 1.22                |                     | 250.9            | Sandstone               | as above, lower half with only occasional calcite lined fractures                                                                                                                                                                                                                                         |            |
| 90      | 0°<br>20°<br>40°<br>35°<br>25° | 250.77 | 252.01 | 1.24                |                     | 252.1            | Sandstone               | as above, bottom half with calcite lined fractures perpendicular to bedding as well as polished surfaces parallel to bedding, occasional roots and burrows, coaly stringer 17 cm from base (sampled for vitr)                                                                                             | VIT 13 ✓   |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                          | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                          |            |
| 91      |         | 252.01-253.94 |    | 1.93                |                     |                  | Sandstone               | as above, mottled in places, thin muddy interbeds with erosional sandstone upper contacts, speckled appearance of small burrow trails, occasional vertical burrow, occasional calcite lined fractures perpendicular to bedding                                           |            |
|         |         | 253.94-254.3  |    | .36                 |                     |                  | Lost Core               |                                                                                                                                                                                                                                                                          |            |
| 91      |         | 254.3-255.13  |    | .83                 |                     | 255.1            | Sandstone               | as above, thick (to 2 cm) calcite infilling of angular breccia zone at top, also broken at top                                                                                                                                                                           |            |
| 92      | 55°     | 255.13-257.39 |    | 2.26                |                     |                  | Sandstone/<br>Siltstone | interbedded, interlaminated and mottled, muddy in places, occasional polished surfaces with calcite lining and similar calcite lined fractures both parallel and perpendicular to bedding, 2.5 cm thick calcite stringer and 15 cm thick cemented breccia zone in middle |            |
| 92      |         | 257.39-257.84 |    | .45                 |                     |                  | Sandstone/<br>Siltstone | as above, mottled throughout                                                                                                                                                                                                                                             |            |
| 93      |         | 257.84-259.20 |    | 1.36                |                     |                  | Sandstone               | very fine grained, homogeneous, medium gray, silty towards bottom, muddy                                                                                                                                                                                                 |            |
| 93      |         | 259.20-260.41 |    | 1.21                |                     |                  | Mudstone                | medium dark gray, silty, carbonaceous, occasional polished surfaces, broken through bottom half                                                                                                                                                                          |            |
|         |         | 260.41-260.57 |    | .26                 |                     |                  | Lost Core               |                                                                                                                                                                                                                                                                          |            |
| 93      |         | 260.57-260.67 |    | .10                 |                     | 261.2            | Mudstone                | as above                                                                                                                                                                                                                                                                 |            |
| 94      | 80°     | 260.67-263.39 |    | 2.72                |                     |                  | Sandstone               | fine grained, grades to siltstone at top, silty and carbonaceous laminae, calcite lined fractures perpendicular to core axis at 35,50,80 and 160 cm from base                                                                                                            |            |
| 95      |         | 263.39-263.54 |    | .15                 |                     |                  | Sandstone               | as above                                                                                                                                                                                                                                                                 |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                     | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                     |            |
| 95      |         | 263.54 | 266.09 | 2.55               |                    | 264.3            | Sandstone              | silty at top, medium light gray, laminated and cross laminated, common carbonaceous laminae, occasional coaly stringer, occasional polished surfaces with calcite fracture filling and rare pyrite mineralization, numerous small muddy intraclast zones throughout | VIT 14 ✓   |
| 96      |         | 266.09 | 266.35 | .26                |                    |                  | Sandstone              | as above, sharp basal contact (good log pick)                                                                                                                                                                                                                       |            |
| 96      |         | 266.35 | 266.60 | .25                |                    |                  | Mudstone               | coaly, dark gray, broken, numerous calcite stringers                                                                                                                                                                                                                |            |
| 96      |         | 266.60 | 268.04 | 1.44               |                    |                  | Mudstone               | carbonaceous, coaly at top, silty and sandy at base, abundant tiny speckle burrows in upper 2/3, core broken in large pieces                                                                                                                                        |            |
| 96      |         | 268.04 | 268.67 | .63                |                    |                  | Sandstone              | interbedded fine and very fine grained, laminated and cross laminated (right way up)                                                                                                                                                                                |            |
| 97      |         | 268.67 | 269.02 | .35                |                    |                  | Sandstone              | as above                                                                                                                                                                                                                                                            |            |
| 97      |         | 269.02 | 269.48 | .46                |                    |                  | Siltstone              | medium light gray, non-carbonaceous, occasional small plant imprints, numerous bivalve shells                                                                                                                                                                       |            |
| 97      |         | 269.48 | 269.52 | .04                |                    |                  | Coal                   | dull, dirty, sheared lustrous, very broken                                                                                                                                                                                                                          |            |
|         |         | 269.52 | 269.72 | .20                |                    |                  | Lost Core              |                                                                                                                                                                                                                                                                     |            |
| 97      |         | 269.72 | 269.83 | .11                |                    |                  | Mudstone               | dark gray, carbonaceous, silty, broken                                                                                                                                                                                                                              |            |
| 97      | 85°     | 269.83 | 271.32 | 1.49               |                    | 270.4            | Sandstone              | fine and very fine grained, grades upward to siltstone, medium dark gray, carbonaceous, occasional coal stringers, few calcite lined fractures and slick-sided surfaces subparallel to bedding, sharp basal contact                                                 |            |
| 97      |         | 271.32 | 271.42 | .10                |                    |                  | Mudstone               | dark gray, carbonaceous                                                                                                                                                                                                                                             |            |



| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                              | Sample No.         |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                              |                    |
| 98      | 65°     | 271.42-272.91 |    | 1.49                |                     |                  | Mudstone               | as above, silty in places, two thin (less than 10 cm) sandstone interbeds in middle, broken near base                                                                                        |                    |
| 98      |         | 272.91-272.96 |    | .05                 |                     | 273.4            | Coal                   | dull and dull lustrous, sheared throughout, broken in small pieces, likely core loss at top and bottom are missing                                                                           | VIT 15 ✓<br>GSR #3 |
|         |         | 272.96-273.31 |    | .35                 |                     |                  | Lost Coal              |                                                                                                                                                                                              |                    |
|         |         | 273.31-273.88 |    | .57                 |                     |                  | Lost Coaly<br>Mudstone |                                                                                                                                                                                              |                    |
| 98      |         | 273.88-274.72 |    | .84                 |                     |                  | Sandstone              | very muddy, carbonaceous, mottled, up to very fine grain size, polished surfaces both parallel to bedding and parallel to core axis associated with calcite stringers                        |                    |
| 99      | 65°     | 274.72-275.98 |    | 1.26                |                     | 275.2            | Mudstone               | medium dark gray, sandy in places, mottled throughout, numerous calcite stringers parallel and perpendicular to bedding                                                                      |                    |
| 99      |         | 275.98-276.08 |    | .10                 |                     | 276.5            | Mudstone               | as above                                                                                                                                                                                     |                    |
| 99      |         | 276.08-276.30 |    | .22                 |                     |                  | Coaly Mudstone         |                                                                                                                                                                                              |                    |
| 99      |         | 276.30-276.38 |    | .08                 |                     |                  | Coal                   | dull and dull lustrous, sheared throughout, powdered and broken into small pieces                                                                                                            | VIT 16 ✓           |
|         |         | 276.38-276.67 |    | .29                 |                     |                  | Lost Coaly<br>Mudstone |                                                                                                                                                                                              |                    |
| 99      |         | 276.67-276.80 |    | .13                 |                     |                  | Coaly Mudstone         |                                                                                                                                                                                              |                    |
| 99      | 35°     | 276.80-277.48 |    | .68                 |                     |                  | Sandstone              | medium light gray, lower fine grain size, carbonaceous laminae throughout, rooted upper 20 cm grades to mudstone, common wispy calcite stringers perpendicular to bedding, BCA's shallow out |                    |

| Box No. | BCA (°)    | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m)        | LITHOLOGIC DESCRIPTION                                                                                                                                                                                                              |                                                                                                                                                                                                                          | Sample No. |
|---------|------------|--------|--------|---------------------|---------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                     |                     |                         | MAIN                                                                                                                                                                                                                                | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                          |            |
| 100     | 53°<br>58° | 277.48 | 279.18 | 1.7                 |                     |                         | Sandstone                                                                                                                                                                                                                           | up to fine grain size with numerous interbeds of finer and muddier sandstone, medium gray, carbonaceous laminae and occasional plant fragments, mottled in places, occasional roots and coaly stringers, good stick core | VIT 17 ✓   |
| 100     | 50°<br>58° | 279.18 | 280.04 | .86                 | 279.5               | Sandstone               | as above                                                                                                                                                                                                                            |                                                                                                                                                                                                                          |            |
| 101     | 51°<br>49° | 280.04 | 282.22 | 2.18                |                     | Sandstone               | as above, occasional thin, calcite stringer zones parallel to bedding, more finer grained towards base                                                                                                                              |                                                                                                                                                                                                                          |            |
| 101     | 45°        | 282.22 | 282.59 | .37                 | 282.5               | Sandstone               | as above                                                                                                                                                                                                                            |                                                                                                                                                                                                                          |            |
| 102     | 50°        | 282.59 | 285.23 | 2.64                |                     | Sandstone               | as above, calcite wisps on bedding planes common, centimeter thick calcite stringer perpendicular to bedding 75 cm from top, 2 cm thick coal band 66 cm from top (Vitrinite #17) occasional coaly stringers                         |                                                                                                                                                                                                                          |            |
| 103     | 42°        | 285.23 | 286.11 | .88                 | 285.6               | Sandstone/<br>Siltstone | thinly interbedded, carbonaceous, coaly stringers, calcite wisps in middle                                                                                                                                                          |                                                                                                                                                                                                                          |            |
| 103     |            | 286.11 | 286.32 | .21                 |                     | Mudstone                | carbonaceous, coaly with coal stringers, broken, polished surfaces throughout                                                                                                                                                       |                                                                                                                                                                                                                          |            |
| 103     | 50°        | 286.32 | 287.86 | 1.54                |                     | Siltstone/<br>Mudstone  | thinly interbedded, mottled, carbonaceous with coaly stringers, coal stringers cuts across core from 25 to 45 cm from top, broken and coaly zone 25 cm from the bottom, carbonaceous plant fragments on bedding surfaces throughout |                                                                                                                                                                                                                          |            |
|         |            | 287.86 | 288.21 | .35                 |                     | Lost Core               |                                                                                                                                                                                                                                     |                                                                                                                                                                                                                          |            |
| 104     |            | 288.21 | 288.76 | .55                 | 288.6               | Siltstone               | muddy at top, sandy at bottom, carbonaceous, coaly stringers at top                                                                                                                                                                 |                                                                                                                                                                                                                          |            |
| 104     |            | 288.76 | 289.94 | 1.18                |                     | Sandstone               | 20 cm interbeds of fine and very fine grained sandstones, laminated, cross laminated and thinly crossbedded, irregular calcite filled fractures and micro-faulting in middle                                                        |                                                                                                                                                                                                                          |            |

| Box No. | BCA (°)  | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                    | Sample No.         |
|---------|----------|--------|--------|--------------------|--------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|         |          | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                    |                    |
| 100     | 53       | 277.48 | 279.18 | 1.7                |                    |                  | Sandstone               | up to fine grain size with numerous interbeds of finer and muddier sandstone, medium gray, carbonaceous lamina and occasional plant fragments, mottled in places, occasional roots and coaly stringers, good stick core            |                    |
| 100     | 50<br>58 | 179.18 | 280.04 | .86                |                    | 279.5            | Sandstone               | as above                                                                                                                                                                                                                           |                    |
| 101     | 51<br>49 | 280.04 | 282.22 | 2.18               |                    |                  | Sandstone               | as above, occasional (thin, calcite stringer zones parallel to bedding, more finer grained towards base)                                                                                                                           |                    |
| 101     | 45       | 282.22 | 282.59 | .37                |                    | 282.5            | Sandstone               | as above                                                                                                                                                                                                                           |                    |
| 102     | 50       | 282.59 | 285.23 | 2.64               |                    |                  | Sandstone               | as above, calcite wisps on bedding planes common, centimeter thick calcite stringer perpendicular to bedding 75 cm from top, 2 cm thick coal band 66 cm from top (Vintrinite #17), occasional coaly stringers                      | VIT 17<br>283.6 dd |
| 103     | 42       | 285.23 | 286.11 | .88                |                    | 285.6            | Sandstone/<br>Siltstone | thinly interbedded, carbonaceous, coaly stringers, calcite wisps in middle                                                                                                                                                         |                    |
| 103     |          | 286.11 | 286.32 | .21                |                    |                  | Mudstone                | carbonaceous, coaly with coal stringers, broken, polished surfaces throughout                                                                                                                                                      |                    |
| 103     | 50       | 286.32 | 287.86 | 1.54               |                    |                  | Siltstone/<br>Mudstone  | thinly interbedded, mottled, carbonaceous with coaly stringers, coal stringer cuts across core from 25 to 45 cm from top, broken and coaly zone 25 cm from the bottom, carbonaceous plant fragments on bedding surfaces throughout |                    |
|         |          | 287.86 | 288.21 | .35                |                    |                  | Lost Core               |                                                                                                                                                                                                                                    |                    |
| 104     |          | 288.21 | 288.76 | .55                |                    | 288.6            | Siltstone               | muddy at top, sandy at bottom, carbonaceous, coaly stringers at top                                                                                                                                                                |                    |

| Box No. | BCA (°) | Depth         |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                             | Sample No.            |
|---------|---------|---------------|--------|---------------------|---------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|         |         | From          | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                             |                       |
| 104     |         | 288.76        | 289.94 | 1.18                |                     |                  | Sandstone               | 20 cm interbeds of fine and very finegrained sandstones, laminated, crosslaminated and thickly crossbedded, irregular calcite filled fractures and micro-faulting in middle |                       |
| 104     |         | 289.94        | 290.81 | .87                 |                     |                  | Siltstone               | medium gray, contains numerous fossil shell fragments and occasional tiny bivalve fossils                                                                                   |                       |
| 104     |         | 290.81-290.90 |        | .09                 |                     |                  | Coaly Mudstone          | sheared throughout, broken into small pieces                                                                                                                                |                       |
|         |         | 290.90-291.25 |        | .35                 |                     |                  | Lost Core               |                                                                                                                                                                             |                       |
| 105     |         | 291.25-291.32 |        | .07                 |                     |                  | Coaly Mudstone/<br>Coal | powdered and broken into small pieces                                                                                                                                       |                       |
| 105     |         | 291.32-291.55 |        | .23                 |                     |                  | Sandstone               | fine grained, medium gray, carbonaceous laminite, mottled in places                                                                                                         |                       |
| 105     | 50      | 291.55-292.58 |        | 1.03                |                     | 291.7            | Sandstone               | as above with occasional tiny fossil bivalves                                                                                                                               |                       |
| 105     |         | 292.58-293.25 |        | .67                 |                     |                  | Siltstone               | muddy, medium gray, like sandstone above but finer grain size, carbonaceous plant fraggers throughout                                                                       |                       |
| 105     |         | 293.25-293.34 |        | .09                 |                     |                  | Mudstone                | coaly and carbonaceous                                                                                                                                                      |                       |
| 105     |         | 293.34-293.44 |        | .10                 |                     |                  | Coal                    | dull/dull lustrous, sheared throughout, broken in small pieces                                                                                                              |                       |
| 105     |         | 293.44-293.63 |        | .19                 |                     |                  | Mudstone                | coaly, carbonaceous plant fragments, many polished surfaces                                                                                                                 |                       |
| 105     |         | 293.63-293.72 |        | .09                 |                     |                  | Coal                    | dull, broken into tiny pieces and powder                                                                                                                                    | VIT 18<br>293.9 mdd ✓ |
| 106     |         | 293.72-294.49 |        | .77                 |                     |                  | Sandstone/<br>Siltstone | interbedded, muddy in siltstones, roots, coaly stringers, carbonaceous laminae calcite wisps parallel to bedding                                                            |                       |

| Box No. | BCA (°)                  | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                  | Sample No.         |
|---------|--------------------------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|         |                          | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                  |                    |
| 106     |                          | 294.49 | 294.76 | .27                |                    |                  | Siltstone              | muddy throughout, coaly stringers                                                                                                                                                                | VIT 19<br>GSC #4 ✓ |
| 106     |                          | 294.76 | 295.10 | .34                |                    |                  | Mudstone               | medium dark gray, polished surfaces throughout                                                                                                                                                   |                    |
| 106     |                          | 295.10 | 295.44 | .34                |                    |                  | Coal                   | dull with bright pieces, powdered and broken into small pieces                                                                                                                                   |                    |
| 106     | 30                       | 295.44 | 296.10 | .64                |                    |                  | Sandstone              | medium gray, fine grained, rooted, occasional calcite lined fractures                                                                                                                            |                    |
| 106     | 30°                      | 295.44 | 296.10 | .64                |                    |                  | Sandstone              | medium gray, fine grained, rooted, occasional calcite lined fractures                                                                                                                            |                    |
| 107     |                          | 296.10 | 296.18 | .08                |                    |                  | Sandstone              | as above, very broken                                                                                                                                                                            |                    |
| 107     | 18°<br>22°<br>30°<br>50° | 196.18 | 296.68 | .50                | 296.7              |                  | Sandstone              | as above, BCA very shallow in middle and top - steeper at base                                                                                                                                   |                    |
| * 107   |                          | 296.68 | 297.04 | .36                |                    |                  | Sandstone/<br>Mudstone | zone of angular sandstone breccia healed with calcite - and highly polished and sheared mudstone                                                                                                 |                    |
| 107     |                          | 297.04 | 297.37 | .33                | 297.8              |                  | Mudstone               | medium gray, occasional coaly stringers, carbonaceous plant fragments on bedding                                                                                                                 |                    |
| 107     | 50°                      | 297.37 | 298.47 | 1.10               |                    |                  | Sandstone              | fine grained with carbonaceous laminae, rooted and coaly roots near top, irregular fractures throughout - lined with calcite, broken in middle, many polished surfaces, microfaulting throughout |                    |
| 108     | 80°                      | 298.47 | 298.67 | .20                |                    |                  | Sandstone              | very fine grained, muddy, tiny polished surfaces throughout                                                                                                                                      |                    |
|         |                          | 298.67 | 299.32 | .65                |                    |                  | Lost Core              |                                                                                                                                                                                                  |                    |

| Box No. | BCA (°)    | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                           | Sample No. |
|---------|------------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                           |            |
| 108     |            | 299.32 | 299.81 | .49                 |                     |                  | Mudstone               | dark gray, carbonaceous, coaly in places, carbonaceous plant fragments, rare sandy laminations, broken throughout, polished surfaces throughout                                                                                                                           |            |
| 108     |            | 299.81 | 300.23 | .42                 |                     | 300.2            | Mudstone               | as above                                                                                                                                                                                                                                                                  |            |
| 108     | 50°        | 300.23 | 301.56 | 1.33                |                     |                  | Sandstone              | fine grained with muddy interbeds and carbonaceous laminae, polished surfaces on many bedding planes, calcite stringers parallel and perpendicular to bedding                                                                                                             |            |
| 109     | 60°        | 301.56 | 302.79 | 1.23                |                     |                  | Sandstone              | fine grained to siltstone interbeds, muddy in places, carbonaceous, calcite lined breccia zone in middle - also microfaulting, occasional slickensided surfaces in middle - one lined with calcite and pyrite (the pyrite also appears slickensided)                      |            |
| 109     |            | 302.79 | 304.09 | 1.30                |                     |                  | Sandstone              | as above, irregular calcite lined fractures throughout - microfaulting as well                                                                                                                                                                                            |            |
| 110     | 80°<br>85° | 304.09 | 305.90 | 1.81                |                     |                  | Siltstone              | with very fine sandstone interlaminations, carbonaceous laminae, occasional coal stringers, calcite healed fracture zones 20 and 90 cm from top, numerous calcite stringers and polished surfaces parallel to bedding throughout, BCA's high throughout, broken in middle |            |
| 110     | 80°<br>25° | 305.90 | 306.64 | .74                 |                     | 306.3            | Sandstone              | very fine and fine grain size, BCA's high for top 18 cm then shallow rapidly, broken at top, calcite stringers throughout, bottom 20 cm is a calcite healed breccia zone                                                                                                  |            |
| 111     | 20°<br>60° | 306.64 | 306.84 | .20                 |                     |                  | Sandstone              | as above, breccia zone in top 2 cm, BCA's steepen at base                                                                                                                                                                                                                 |            |
| 111     | 70°        | 306.84 | 307.29 | .45                 |                     |                  | Siltstone              | carbonaceous, laminated, numerous calcite stringers roughly parallel to bedding                                                                                                                                                                                           |            |

| Box No. | BCA (°)                                   | Depth                          |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                        | Sample No. |
|---------|-------------------------------------------|--------------------------------|--------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                                           | From                           | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                        |            |
| 111     | 65°<br>0°<br>10°                          | 307.29                         | 308.23 | .94                 |                     |                  | Sandstone              | medium light gray, fine grained, carbonaceous laminae, BCA's steep in first 25 cm - then vertical, calcite lined fractures throughout, both parallel and perpendicular to bedding                                                                                      |            |
| 111     | 25°<br>0°                                 | 308.23                         | 308.83 | .60                 |                     |                  | Mudstone               | with silty laminations, polished surfaces, broken at top, near vertical in all but top portion                                                                                                                                                                         |            |
| 111     | 0°                                        | 308.83                         | 309.31 | .48                 |                     | 309.4            | Mudstone               | as above, broken in large pieces                                                                                                                                                                                                                                       |            |
| 112     | 0°<br>0°<br>0°<br>10°<br>10°<br>50°<br>0° | 309.31                         | 311.53 | 2.22                |                     |                  | Siltstone/<br>Mudstone | interlaminated, wispy calcite on bedding planes, sandy interbeds near bottom, broken throughout, very broken at base and 30 cm above base, numerous calcite lined fractures in bottom half - also polished surfaces - likely core lost, BCA's each for 30 cm intervals |            |
|         |                                           | 311.53                         | 311.63 | .10                 |                     |                  | Lost Core              |                                                                                                                                                                                                                                                                        |            |
| 113     | 50°                                       | 311.63                         | 313.93 | 2.30                |                     | 312.4            | Siltstone              | with sandy and muddy interbeds, sandier at base, BCA's consistently 50°, broken at base                                                                                                                                                                                |            |
|         |                                           | 313.93                         | 314.14 | .21                 |                     | 314.9            | Siltstone              | as above, sandy, broken                                                                                                                                                                                                                                                |            |
| 114     | 50°<br>30°<br>10°                         | 314.14                         | 316.37 | 2.23                |                     |                  | Sandstone              | fine grained, medium light gray, silty interlaminations, calcite lined fractures throughout upper 70 cm and lower 100 cm, BCA's in upper half 50° - lower half 10° to 30°                                                                                              |            |
| 114     | 20°                                       | 316.37-316.79<br>316.79-316.88 |        | .42<br>.09          |                     |                  | Sandstone<br>Lost Core | as above, broken throughout, fractures parallel to core axis and to bedding                                                                                                                                                                                            |            |

| Box No. | BCA (°)                                | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                       | Sample No. |
|---------|----------------------------------------|--------|--------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                                        | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                       |            |
| 115     | 15°                                    | 316.88 | 317.03 | .15                 |                     |                  | Sandstone              | as above, very broken upper half                                                                                                                                      |            |
| 115     | 20°<br>40°<br>30°<br>50°<br>40°<br>10° | 317.03 | 319.14 | 2.11                |                     | 317.9            | Sandstone              | as above, broken near base and in large fragments throughout, fractures throughout, thin bedded and laminated, BCA's are for 30 cm intervals, micro-faulting          |            |
| 116     | 10°                                    | 319.14 | 319.94 | .80                 |                     |                  | Sandstone              | muddy and silty, fine and very fine grained, interlaminated, often mottled, 2 cm calcite bands 10-50-and 75 cm from top, BCA's are low throughout - approximately 10° |            |
| 116     | 15°                                    | 319.94 | 321.94 | 2.00                |                     | 321.0            | Sandstone              | as above, occasional calcite lined fractures, cannot distinguish right way up structures                                                                              |            |
| 117     | 0°<br>5°                               | 321.94 | 322.99 | 1.05                |                     |                  | Sandstone              | as above                                                                                                                                                              |            |
| 117     | 12°                                    | 322.99 | 323.49 | 0.50                |                     | 324.0            | Sandstone              | as above, slickensided basal contact - contact quite gradational                                                                                                      |            |
| 117     | 10°                                    | 323.49 | 324.62 | 1.13                |                     |                  | Siltstone              | muddy, mottled, carbonaceous, occasional coaly stringers                                                                                                              |            |
| 118     | 30°                                    | 324.62 | 326.00 | 1.38                |                     |                  | Siltstone/<br>Mudstone | interlaminated, mottled in places, medium dark gray and medium gray colors, very broken near bottom, 2 cm coal stringer 15 cm from bottom                             | VIT 20 ✓   |
| 118     | 30°                                    | 326.00 | 326.98 | .98                 |                     |                  | Mudstone               | dark gray, carbonaceous, numerous polished surfaces, broken in middle, silty in places                                                                                |            |
| 118     | 30°                                    | 326.98 | 327.10 | .17                 |                     | 328.3            | Mudstone               | as above, coal stringer near top                                                                                                                                      |            |



| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                 | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                 |            |
| 119     | 30°     | 327.10 | 329.74 | 2.64                |                     |                  | Mudstone               | carbonaceous, medium dark gray, with carbonaceous plant remains throughout and occasional coal stringers and calcite stringers parallel to bedding, numerous polished surfaces, broken near top |            |
| 120     |         | 329.74 | 329.84 | 0.10                |                     |                  | Mudstone               | as above                                                                                                                                                                                        |            |
| 120     |         | 329.84 | 331.80 | 1.96                |                     | 331.3            | Mudstone               | medium gray, slightly carbonaceous with occasional carbonaceous plant fragments, hard, mottled texture, occasional polished surfaces, very broken bottom 10 cm                                  |            |
| 120     |         | 331.80 | 332.34 | .54                 |                     | 333.5            | Mudstone               | as above with a fine network of small fractures throughout cemented with the white, soft pearly/waxy/talc like mineral found further up the hole                                                |            |
| 121     | 50°     | 332.34 | 334.69 | 2.35                |                     |                  | Mudstone               | as above with irregular fractures in places - lined with soft talc-like mineral, occasional fine silty laminations, very broken in middle and bottom 50 cm, common polished (mirror) surfaces   |            |
| 121     |         | 334.69 | 334.79 | 0.10                |                     | 336.5            | Mudstone               | as above                                                                                                                                                                                        |            |
| 122     |         | 334.79 | 335.71 | .92                 |                     |                  | Siltstone/<br>Mudstone | carbonaceous, coaly, numerous fractures in middle - mineral lined, very broken throughout                                                                                                       |            |
|         |         | 335.71 | 338.36 | 2.65                |                     |                  | Lost Core              |                                                                                                                                                                                                 |            |
| 122     |         | 338.36 | 339.02 | .66                 |                     |                  | Mudstone/<br>Siltstone | as above, silty in bottom half, broken throughout                                                                                                                                               |            |
| 122     |         | 339.02 | 339.37 | .35                 |                     |                  | Sandstone              | fine to very fine grained, fines upward, few laminations, mottled in places (no core loss)                                                                                                      |            |
| 123     |         | 339.37 | 340.24 | .87                 |                     |                  | Sandstone              | as above, 2 cm calcite filled fracture near bottom                                                                                                                                              |            |

| Box No. | BCA (°)    | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                   | Sample No.      |
|---------|------------|--------|--------|---------------------|---------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|         |            | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                   |                 |
| 123     | 50°        | 340.24 | 341.86 | 1.62                |                     | 340.5            | Sandstone               | to fine grain size, cm thick calcite filled fractures parallel to core axis and bedding                                                                                                                                                                                                                           | VIT 21<br>GSC ✓ |
| 124     |            | 341.86 | 342.07 | .21                 |                     |                  | Siltstone               | muddy and carbonaceous                                                                                                                                                                                                                                                                                            |                 |
| 124     |            | 342.07 | 342.10 | .03                 |                     |                  | Mudstone                | coaly                                                                                                                                                                                                                                                                                                             |                 |
| 124     |            | 342.10 | 342.35 | .25                 |                     |                  | Coaly                   | dull with bright bands, occasional fusainous lenses, mm sized muddy bands in pieces near top, very broken and powdered top and bottom, sheared throughout                                                                                                                                                         |                 |
|         |            | 342.35 | 342.40 | .05                 |                     |                  | Lost Coal               |                                                                                                                                                                                                                                                                                                                   |                 |
| 124     |            | 342.40 | 343.00 | .60                 |                     |                  | Mudstone                | dark gray, carbonaceous and coaly, powdered in middle                                                                                                                                                                                                                                                             |                 |
| 124     | 60°        | 343.00 | 344.22 | 1.22                |                     | 343.5            | Mudstone/<br>Siltstone  | thinly interbedded, mottled in places, wispy stringers on bedding surfaces with polished surfaces throughout, Carbonaceous plant fragments throughout                                                                                                                                                             |                 |
| 125     | 70°        | 344.22 | 345.91 | 1.69                |                     |                  | Siltstone               | muddy in places, sandy in places, carbonaceous plant fragments, occasional coaly stringers, numerous calcite stringers and polished surfaces parallel to bedding, bottom 25 cm is a calcite healed fracture zone, very broken at bottom                                                                           |                 |
|         |            | 345.91 | 346.44 | .53                 |                     |                  | Lost Core               |                                                                                                                                                                                                                                                                                                                   |                 |
| 125     |            | 346.44 | 347.19 | .75                 |                     | 346.6            | Siltstone               | as above, broken in large and small pieces throughout, sandy at bottom                                                                                                                                                                                                                                            |                 |
| 126     | 50°<br>48° | 347.19 | 349.59 | 2.40                |                     |                  | Sandstone/<br>Siltstone | interbedded on 20 to 30 cm scale, muddy in places, occasional cm coal bands (ie in broken zone 120 cm from top), generally sharp contacts, cross laminated sandstone at top contains correct right way up structures, numerous calcite stringers and wispy calcite zones - usually associated with coaly horizons |                 |
| 126     |            | 349.59 | 349.74 | .15                 |                     | 349.6            | Sandstone/<br>Siltstone | as above, muddy                                                                                                                                                                                                                                                                                                   |                 |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                             | Sample No.          |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                             |                     |
| 127     |         | 349.74 | 352.36 | 2.62               |                    |                  | Sandstone/<br>Siltstone | interbedded, as above, right way up by numerous cross laminations, broken 30 and 115 cm from bottom, 15 cm coaly mudstone at 115 cm from bottom                                                                                                             |                     |
| 128     |         | 352.36 | 352.62 | .26                |                    |                  | Sandstone/<br>Siltstone | as above, muddy                                                                                                                                                                                                                                             |                     |
| 128     | 55°     | 352.62 | 353.57 | .95                |                    | 352.7            | Siltstone/<br>Mudstone  | as above, less sandy - more muddy interbeds, rooted, burrows, occasionally wispy calcite                                                                                                                                                                    |                     |
| 128     | 70°     | 353.57 | 355.09 | 1.52               |                    |                  | Mudstone                | silty with numerous silty interlaminations in places, medium gray, darker and carbonaceous in places, occasional coaly stringers, wispy calcite stringers parallel to bedding, numerous polished surfaces parallel to bedding near bottom, broken at bottom |                     |
| 129     |         | 355.09 | 355.60 | .51                |                    |                  | Mudstone                | as above, less silty - more carbonaceous near base, broken at bottom                                                                                                                                                                                        |                     |
| 129     |         | 355.60 | 357.48 | 1.88               |                    | 355.7            | Mudstone                | medium dark gray, carbonaceous, numerous coal stringers, occasional polished surfaces throughout, numerous polished surfaces in very broken zone at top, powdered coaly zone 50 cm from bottom - 1 or 2 cm recovered                                        | 357.1m<br>VIT 22 ✓  |
| 130     |         | 357.48 | 358.11 | .63                |                    |                  | Mudstone                | as above, 1 cm bright-powdered coal 18 cm from bottom                                                                                                                                                                                                       | VIT 23<br>558.5dd ✓ |
| 130     | 60°     | 358.11 | 360.01 | 1.90               |                    | 358.7            | Siltstone/<br>Mudstone  | medium dark gray, carbonaceous, rooted, mottled in places, roughly 20-30 cm gradational interbeds, occasional polished surfaces, wispy calcite throughout, carbonaceous plant fragments throughout                                                          |                     |
| 131     |         | 360.01 | 360.88 | .87                |                    |                  | Siltstone               | very muddy, thin bedded, carbonaceous plant fragments on bedding, planes, medium gray sheared coaly mudstone in top 10 cm                                                                                                                                   |                     |
| 131     | 50°     | 360.88 | 362.68 | 1.80               |                    | 361.8            | Siltstone               | as above                                                                                                                                                                                                                                                    |                     |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                    | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                    |            |
| 132     |         | 362.68 | 363.81 | 1.13               |                    |                  | Mudstone                | medium gray, slightly carbonaceous, slightly silty, sheared and polished surfaces throughout at low angles to the core axis                                                                                        |            |
| 132     | 40°     | 363.81 | 365.39 | 1.58               |                    | 304.8            | Siltstone               | to very fine grained sandstone, muddy at top, sandiest at bottom, rare coaly plant fragments, polished surfaces parallel to bedding, occasional irregular calcite stringer zone and microfaulting, good stick core |            |
| 133     | 45°     | 365.39 | 366.97 | 1.58               |                    |                  | Siltstone/<br>Sandstone | to very fine grain size, interlaminated and interbedded, occasionally carbonaceous-rooted-mottled, muddy, rare calcite stringers, good stick core                                                                  |            |
| 133     |         | 366.97 | 368.06 | 1.09               |                    | 367.9            | Siltstone/<br>Sandstone | as above, sandier in bottom half                                                                                                                                                                                   |            |
| 134     | 60°     | 368.06 | 370.07 | 2.01               |                    |                  | Siltstone/<br>Sandstone | as above, sand content increasing                                                                                                                                                                                  |            |
| 134     | 55°     | 370.07 | 370.60 | .53                |                    | 370.9            | Siltstone/<br>Sandstone | as above (good stick)                                                                                                                                                                                              |            |
| 135     |         | 370.60 | 373.07 | 2.47               |                    |                  | Sandstone/<br>Siltstone | as above                                                                                                                                                                                                           |            |
| 135     |         | 373.07 | 373.25 | .18                |                    | 374.0            | Sandstone/<br>Siltstone | as above                                                                                                                                                                                                           |            |
| 136     |         | 373.25 | 375.53 | 2.28               |                    |                  | Sandstone/<br>Siltstone | as above with interbeds of "cleaner" - fine grained sandstone in bottom half, sharp basal contact                                                                                                                  |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                  | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                  |            |
| 136     |         | 375.53 | 375.81 | .39                |                    |                  | Sandstone              | fine grained, medium gray (medium light gray on core cut surface), vague carbonaceous laminae and small scale crossbedding, occasional mudstone intraclast horizons, occasional coal stringer, numerous calcite lined fractures both parallel and perpendicular to bedding, maximum grain size is lower medium to upper fine, grains are sub-rounded and sand is well sorted, well modurated with calcite cement |            |
| 137     |         | 375.81 | 375.92 | .11                |                    |                  | Sandstone              | as above                                                                                                                                                                                                                                                                                                                                                                                                         |            |
| 137     | 55°     | 375.92 | 378.44 | 2.52               |                    | 377.0            | Sandstone              | as above, 10 cm intraclast zone near base                                                                                                                                                                                                                                                                                                                                                                        |            |
| 138     |         | 378.44 | 378.92 | .48                |                    |                  | Sandstone              | as above, broken - possible lost core                                                                                                                                                                                                                                                                                                                                                                            |            |
| 138     | 65°     | 378.92 | 381.12 | 2.20               |                    | 380.1            | Sandstone              | as above, a 2 cm calcite filled fracture at low angle to core axis is truncated by a polished surface and placed against shallowly dipping sandstone, broken in large pieces                                                                                                                                                                                                                                     |            |
| 139     |         | 381.12 | 381.63 | .51                |                    |                  | Sandstone              | as above, broken in 10 cm pieces, numerous 5 mm calcite lined fractures which are also polished surfaces                                                                                                                                                                                                                                                                                                         |            |
| 139     |         | 381.63 | 381.60 | 1.97               |                    | 383.1            | Sandstone              | as above, occasional thin finer sandstone interbed, grain size decreases towards bottom                                                                                                                                                                                                                                                                                                                          |            |
| 140     |         | 383.60 | 384.70 | 1.10               |                    |                  | Sandstone              | lower fine grained with occasional very fine and upper fine interbeds, carbonaceous with occasional coaly plant fragments, broken in 10 cm pieces, laminated and thin bedded                                                                                                                                                                                                                                     |            |
|         |         |        | 384.70 |                    |                    | 386.2            |                        | End of Hole 83-17                                                                                                                                                                                                                                                                                                                                                                                                | 15/07/83   |

ESSO RESOURCES CANADA LIMITED - COAL DIVISION  
CORE & COAL CORE DESCRIPTION

|          |               |
|----------|---------------|
| Project  | Falling Creek |
| Map Area | 930,93P       |

|       |          |
|-------|----------|
| Begin | 26/06/83 |
| End   | 02/07/83 |

|                  |           |
|------------------|-----------|
| Core Examiner(s) | D. Hallas |
|                  | S. Carr   |

|          |       |
|----------|-------|
| Hole No. | 83-17 |
|----------|-------|

Hole Particulars

Coal Coring Performance

Logging

|             |                 |              |     |
|-------------|-----------------|--------------|-----|
| Location    | 6/51785 m North |              |     |
|             | 549115 m East   |              |     |
| Elevation   | 1190 m          |              |     |
| Total Depth | 384.7 m         | Hole Bearing | -   |
|             |                 | Hole Angle   | 90° |

|                |        |
|----------------|--------|
| Core Diameter  | HQ     |
| Core Recovered | 360.16 |
| Length Cored   | 382.0  |
| Core Recovery  | 94.3 % |

|           |          |
|-----------|----------|
| Logged By | BPB      |
|           | Neutron  |
|           | CCS      |
|           | LSD/BRD  |
|           | DIPMETER |

|                  |           |
|------------------|-----------|
| Examination Date | July 1983 |
|------------------|-----------|

| Box No. | BCA (°) | Depth |             | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                    | Sample No. |
|---------|---------|-------|-------------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------|------------|
|         |         | From  | To          |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                    |            |
|         |         |       | 0 - 2.70    |                    |                    |                  | TRICONED               | casing set at 2.70 meters                                                          |            |
|         |         |       |             |                    |                    |                  | MOOSEBAR               | hole spudded in Moosebar formation                                                 |            |
| 1       |         |       | 2.70 - 3.77 | 1.07               |                    |                  | Mudstone               | deep iron stained weathering on fracture planes, broken in small pieces throughout |            |
| 1       |         |       | 3.77 - 4.51 | .74                | 4.70               |                  | Mudstone               | broken throughout                                                                  |            |
| 1       |         |       | 4.51 - 4.59 | .08                | 5.8                |                  | Mudstone               | as above                                                                           |            |

*Handwritten signature/initials*

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                 | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                 |            |
| 2       | 80°     | 4.59  | 6.59  | 2.0                |                    |                  | Mudstone               | iron stained joints at low angle to core axis                                                                                   |            |
| 3       |         | 6.59  | 9.42  | 2.83               |                    | 7.9              | Mudstone               | silty (concretion-like in outcrop) .9 - 1.3 m from top, iron-stained weathering is concretion-like                              |            |
| 3       |         | 9.42  | 10.09 | .67                |                    |                  | Mudstone               |                                                                                                                                 |            |
| 4       |         | 10.09 | 10.73 | .64                |                    |                  | Mudstone               | large pyritized / calcite mineralized carbonaceous wood fragment, broken at top                                                 |            |
| 4       |         | 10.73 | 12.28 | 1.55               |                    | 10.97            | Mudstone               | joint surface parallel to core axis, occasional brachiopod fossil, silty in places                                              |            |
| 4       |         | 12.28 | 12.55 | .27                |                    | 12.19            | Mudstone               | slightly silty                                                                                                                  |            |
| 5       |         | 12.55 | 13.85 | 1.30               |                    |                  | Mudstone               | as above, occasional shell fragments, pyritized tube burrow, calcite lined slickenside at 45° to core axis, disseminated pyrite |            |
| 5       |         | 13.85 | 15.12 | 1.27               |                    | 14.3             | Mudstone               | as above                                                                                                                        |            |
| 6       |         | 15.12 | 16.69 | 1.57               |                    |                  | Mudstone               | mm scale pyritized burrows                                                                                                      |            |
| 6       |         | 16.69 | 17.67 | .98                |                    | 17.37            | Mudstone               | mm scale pyritized burrows, silty at base, mica                                                                                 |            |
| 7       |         | 17.67 | 19.75 | 2.08               |                    |                  | Mudstone               | listric fracture surface at 45° to core axis                                                                                    |            |
| 7       |         | 19.75 | 20.51 | .76                |                    | 20.4             | Mudstone               | slightly silty, polished listric surfaces at high angle to bedding about 20 cm of siltstone in center of the next unit          |            |

| Box No. | BCA (°)        | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sample No. |
|---------|----------------|-------|-------|--------------------|--------------------|------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From  | To    |                    |                    |                  | MAIN                                  | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 8       |                | 20.51 | 22.73 | 2.22               |                    |                  | Mudstone                              | silty throughout, thin (10 cm) sandstone interbed 30 cm from top, sandstone; upper fine grained and slightly burrowed, sharp irregular basal contact and gradational upper contact, grades upward to mudstone, micro-faults with calcite wisps and dark green glauconite mineralization, bottom 0.7 m contains glauconite mineralization throughout, disseminated pyrite and pyritization on joint surface parallel to core axis, slightly carbonaceous wood imprints, pyritized shell          |            |
| 8       |                | 22.73 | 22.85 | .12                |                    |                  | Sandstone                             | very fine grained, very thinly bedded, polished surfaces at high angle to bedding, iron staining in old fractures, lack of glauconite                                                                                                                                                                                                                                                                                                                                                           |            |
| 8       |                | 22.85 | 23.12 | .27                |                    | 23.4             | Sandstone/<br>Siltstone               | numerous polished surfaces at high angle to bedding, calcite stringers sub-parallel to bedding, micro-faulting throughout, numerous 2 mm diameter horizontal mud-filled tubes, apparent lack of glauconite                                                                                                                                                                                                                                                                                      |            |
| 9       | 78<br>80<br>80 | 23.12 | 25.91 | 2.79               |                    |                  | Interbedded<br>Sandstone/<br>Mudstone | bioturbated especially in mudstone bands, very thinly bedded, progressively more bioturbated mudstone towards base (sandier towards top), mudstones are very silty, occasional polished surfaces at high angle to bedding, sandstones are fine to very fine, medium dark grey, disseminated pyrite in many burrows, both mm size horizontal burrows and cm size vertical burrows, sandstones have a sharp basal contact and fine upwards, occasional irregular pyrite blebs, lack of glauconite |            |
| 10      |                | 25.91 | 28.35 | 2.44               |                    | 26.5             | Bioturbated<br>Siltstone              | muddy with some thin sandy interbeds throughout, pyrite as in above unit, occasional iron staining on surfaces parallel to bedding, well preserved 2 cm X 2 cm pelecypod (bivalve?) with fine growth lines, no glauconite                                                                                                                                                                                                                                                                       |            |
| 11      |                | 28.35 | 31.09 | 2.74               |                    | 29.3             | Bioturbated<br>Mudstone               | silty in places, numerous very thin sandstone interbeds in middle, closely spaced very tiny (less than mm size) burrow network abundant in lower half of unit, well preserved fossils, remains of carbonaceous woody fragments, no glauconite                                                                                                                                                                                                                                                   |            |



| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |
| 12      |         | 31.09 | 31.3  | .21                |                    |                  | Bioturbated Mudstone   | as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |
| 12      |         | 31.30 | 32.27 | .97                |                    | 32.3             | Bioturbated Mudstone   | as above with a few thin sandy interbeds, occasional tiny (2 mm diameter) pebbles near base                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |
| 12      |         | 32.27 | 33.01 | .74                |                    |                  | Conglomerate           | small pebble conglomerate with pebbles ranging up to 1 cm in diameter, pebbles are well rounded and poorly sorted with a dark colored sandy matrix, occasional very tiny slightly carbonaceous plant fragments, dominantly chert pebbles, generally grain supported, pebbles range from light grey, dark green to dark grey, milky quartz, light colors dominate, average pebble size is 3 mm, occasional flecks of disseminated pyrite, the upper 25 cm contains abundant irregular calcite stringers (some stringers are subparallel to bedding), contacts are moderately sharp, core breaks across pebbles, BLUE SKY CONGLOMERATE. |            |
| 12      |         | 33.01 | 33.34 | .33                |                    |                  | Sandstone              | upper fine grained, medium light grey, churned and burrowed / cm wide mud filled tubes usually parallel to bedding, occasional mm size pebbles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| 12      |         | 33.34 | 33.72 | .38                |                    | 34.4             | Sandstone              | as above with scattered pebble horizons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |
| 13      |         | 33.72 | 33.9  | .18                |                    |                  | Sandstone              | as above with scattered pebbles up to 3 cm in diameter, traces of pyrite, sharp irregular contact with mudstone below, pyritization of numerous pebbles, grain size is upper fine grained to medium grained                                                                                                                                                                                                                                                                                                                                                                                                                           |            |
|         |         |       |       |                    |                    |                  | CONTACT                | MOOSEBAR/GETHING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |

| Box No. | BCA (°)    | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                          | Sample No. |
|---------|------------|-------|-------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                          |            |
| 13      |            | 33.90 | 34.83 | .93                 |                     |                  | Mudstone               | carbonaceous, coaly stringers, abundant carbonaceous plant fragments of great variety (leaves, stems, needles, fern like, twigs, etc), fractures easily on bedding planes                                                                                                |            |
| 13      |            | 34.83 | 36.37 | 1.54                |                     | 35.6             | Mudstone               | as above with pyritized burrows (2m X 20mm in size), minor sandy interbeds, wispy calcite subparallel to bedding, calcite slickensided and numerous polished surfaces at a high angle to bedding, very silty at base, broken interval in center                          |            |
| 14      | 70°<br>77° | 36.37 | 36.77 | .40                 |                     |                  | Mudstone               | silty, pyritized burrows, slightly carbonaceous, 5 cm thick fine grained sandstone interbed in center                                                                                                                                                                    |            |
| 14      |            | 36.77 | 37.72 | .95                 |                     |                  | Sandstone              | upper fine grained, carbonaceous laminae, bioturbated, carbonaceous roots, 2-15 cm thick siltstone bands at base                                                                                                                                                         |            |
| 14      |            | 37.72 | 38.97 | 1.25                |                     | 38.7             | Mudstone               | silty throughout, very silty at top, occasional carbonaceous plant fragments and roots, well preserved pelecypod shell 2cm X 2cm <sup>2</sup> ground at base, calcite slickensides at base, blocky fracture (like Moosebar), some horizons have abundant plant fragments |            |
| 15      |            | 38.97 | 40.45 | 1.48                |                     |                  | Siltstone              | very argillaceous in places, very thin root patterns (like grass roots), otherwise no plant fragments, high polished surfaces in center                                                                                                                                  |            |
| 15      |            | 40.45 | 41.55 | 1.10                |                     | 4.17             | Mudstone/<br>Siltstone | 20 cm thick interbeds, slightly carbonaceous, well preserved pelecypod, calcite stringers parallel to bedding 45 cm from base, 5 cm thick carbonaceous sandstone 30 cm from base                                                                                         |            |
| 16      |            | 41.55 | 43.51 | 1.96                |                     |                  | Siltstone              | minor sandstone and mudstone interbeds, 20 cm sst interbed in middle, numerous carbonaceous plant fragments in muddier beds, occasional coaly fragments,                                                                                                                 |            |

| Box No. | BCA (°) | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                            | Sample No. |
|---------|---------|-------------|----|--------------------|--------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From        | To |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                            |            |
|         |         | 43.51-43.72 |    | .20                |                    |                  | LOST CORE               | numerous wispy calcite stringers parallel to bedding planes                                                                                                                                                                                |            |
| 16      |         | 43.72-44.30 |    | .58                |                    | 44.8             | Siltstone               | as above                                                                                                                                                                                                                                   |            |
| 17      |         | 44.30-44.54 |    | .24                |                    |                  | Sandstone               | fine grained, muddy, churned, upper contact lost, sharp lower contact, slightly carbonaceous, medium dark gray color                                                                                                                       |            |
|         |         | 44.54-44.98 |    | .45                |                    |                  | LOST CORE               |                                                                                                                                                                                                                                            |            |
| 17      |         | 44.98-47.14 |    | 2.16               |                    |                  | Siltstone/<br>Mudstone  | 1.0 m of siltstone in center, siltstone is: bioturbated, medium dark grey-brown, large coaly plant fragments; mudstone is coaly, dark grey, numerous calcite wisps approximately parallel to bedding (0.24m lost coal seam 80cm from base) |            |
| 17      |         | 47.14-47.39 |    | .25                |                    | 47.8             | Mudstone                | as above                                                                                                                                                                                                                                   |            |
| 17      |         | 47.39-47.75 |    | .36                |                    |                  | Sanstone                | rapid gradational upper contact, upper fine grained, minor bioturbation and rootlets, very hard, medium dark grey                                                                                                                          |            |
| 18      |         | 47.75-48.03 |    | .28                |                    |                  | Sandstone               | as above, coaly plant fragments towards base, also muddy towards base, sharp lower contact                                                                                                                                                 |            |
| 18      |         | 48.03-48.31 |    | .28                |                    |                  | Mudstone                | carbonaceous, dark grey numerous coaly plant fragments, numerous calcite stringers subparallel to bedding in middle, gradational lower contact                                                                                             |            |
| 18      |         | 48.31-50.11 |    | 1.80               |                    |                  | Siltstone/<br>Sandstone | muddy at top, fine grained sandstone, medium grey, carbonaceous fragments, coaly stringers, coaly roots, minor bioturbation, some laminations and cross laminations, pyritization associated with minor polished surfaces, occasional      |            |

| Box No. | BCA (°)    | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                         | Sample No. |
|---------|------------|-------------|----|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From        | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                         |            |
| 18      |            | 50.11-50.31 |    | .20                |                    | 50.9             | Sandstone              | thin zones of calcite stringers and carbonaceous matter<br>as above                                                                                                     |            |
| 19      | 62°<br>71° | 50.31-52.26 |    | 1.95               |                    |                  | Sandstone              | as above, irregular joint perpendicular to bedding, large (1-2cm X 18cm) sub-vertical sand filled burrows/tubes, right way up (cross-laminations), grades to unit below |            |
| 19      |            | 52.26-53.1  |    | .84                |                    |                  | Siltstone              | muddy in places, gradational throughout, homogeneous, occasional carbonaceous plant fragments                                                                           |            |
| 20      |            | 53.10-53.87 |    | .77                |                    |                  | Siltstone              | medium dark grey, homogeneous, no plant fragments, polished fracture plane at 45° to bedding near base                                                                  |            |
| 20      |            | 53.87-55.72 |    | 1.85               |                    |                  | Siltstone              | thinly bedded with mudstone and fine grained sandstone interbeds, no plant remains and fossils, medium grey                                                             |            |
| 20      |            | 55.72-55.85 |    | .13                |                    | 53.95            | Siltstone              | as above                                                                                                                                                                |            |
| 21      |            | 55.85-56.44 |    | .59                |                    |                  | Mudstone               | medium dark grey, not carbonaceous, grades to siltstone at top                                                                                                          |            |
| 21      |            | 56.44-58.14 |    | 1.70               |                    |                  | Siltstone              | minor sandstone interbeds, occasional large burrows and lack of carbonaceous material                                                                                   |            |
|         |            | 58.14-58.34 |    | .20                |                    |                  | LOST CORE              |                                                                                                                                                                         |            |
| 21      |            | 58.34-58.75 |    | .41                |                    |                  | Mudstone               | silty laminations, dark grey, no plant matter                                                                                                                           |            |
| 22      |            | 58.75-59.37 |    | .62                |                    |                  | Siltstone              | grades to mudstone at top, sandstone at bottom, dark grey, rare carbonaceous plant fragments                                                                            |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                  |                                                                                                                                                                                                                                      | Sample No.        |
|---------|---------|-------|-------|---------------------|---------------------|------------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
|         |         | From  | To    |                     |                     |                  | MAIN                                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                      |                   |
| 22      |         | 59.37 | 59.60 | .23                 |                     | 60.05            | Siltstone                               | as above, sandstone upper 5 cm                                                                                                                                                                                                       | GSC #1<br>VIT 1 ✓ |
| 22      |         | 59.60 | 60.00 | .40                 |                     |                  | Mudstone                                | carbonaceous, coaly towards base, lower half broken, highly broken at base, numerous polished surfaces at base, calcite stringers subparallel to bedding near the top                                                                |                   |
| 22      |         | 60.00 | 60.03 | .03                 |                     |                  | Coal                                    | dull lustrous, hard, sheared throughout                                                                                                                                                                                              |                   |
|         |         | 60.03 | 60.23 | .20                 |                     |                  | Lost Coal                               |                                                                                                                                                                                                                                      |                   |
| 22      |         | 60.23 | 60.30 | .07                 |                     |                  | Coal Mudstone                           | sheared throughout, very dark grey, broken                                                                                                                                                                                           |                   |
|         |         | 60.30 | 60.78 | .48                 |                     |                  | Lost Coal                               |                                                                                                                                                                                                                                      |                   |
| 22      |         | 60.78 | 61.80 | 1.02                |                     | 61.2             | Interbedded Sandstone/Siltstone         | polished fracture parallel to and at 45° to core axis, irregular calcite stringers associated with microfaults, Sandstone is very fine grained, numerous plant fragments on bedding surfaces,                                        |                   |
| 23      |         | 61.80 | 62.29 | .49                 |                     |                  | Interbedded Sandstone/Siltstone         | as above, polished surfaces, zones of calcite wisps                                                                                                                                                                                  |                   |
| 23      |         | 62.29 | 64.50 | 2.21                |                     | 63.09            | Silty Mudstone with Sandstone Interbeds | Mudstone is carbonaceous with coaly stringers, small degree of soft sediment deformation and bioturbation, zones containing calcite wisps, 10 cm of carbonaceous mudstone 40 cm from the base, 3 cm of carbonaceous mudstone at base |                   |
| 24      |         | 64.50 | 65.34 | .84                 |                     |                  | Silty Mudstone with Sandstone Interbeds | as above with convolute laminae, 9 cm coaly mudstone at top, ground at base                                                                                                                                                          |                   |

| Box No. | BCA (°)                  | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                  |                                                                                                                                                                                                                                                                                                                                                                                                                | Sample No. |
|---------|--------------------------|-------|-------|--------------------|--------------------|------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                          | From  | To    |                    |                    |                  | MAIN                                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                |            |
| 24      | 70°<br>80°<br>55°<br>80° | 65.34 | 67.20 | 1.86               |                    | 66.14            | Silty Mudstone with Sandstone Interbeds | as above, 25 cm thick sandstone 45 cm from top                                                                                                                                                                                                                                                                                                                                                                 |            |
| 25      | 65°                      | 67.20 | 68.39 | 1.19               |                    |                  | Silty Mudstone with Sandstone Interbeds | as above, 20 cm thick sandstone 30 cm from top, plant fragments on bedding planes                                                                                                                                                                                                                                                                                                                              |            |
| 25      |                          | 68.39 | 69.39 | 1.00               |                    | 69.19            | Mudstone                                | sometimes silty, bioturbated, carbonaceous plant fragments, coaly stringers, numerous calcite stringers subparallel to bedding                                                                                                                                                                                                                                                                                 |            |
| 25      |                          | 69.39 | 69.87 | .48                |                    |                  | Mudstone                                | dark grey, crumbly fracture, carbonaceous plant fragments, polished surfaces and calcite stringers subparallel to bedding at top, bottom 9 centimeters grades through siltstone to sandstone                                                                                                                                                                                                                   |            |
| 26      | 65°<br>72°               | 69.87 | 71.47 | 1.60               |                    | 72.23            | Sandstone                               | upper fine and lower medium grain sizes, parallel laminated medium light to medium gray in color, scattered thin mudstone intraclasts, carbonaceous laminae, bioturbation is a very minor feature, occasional calcite stringers parallel and perpendicular to bedding, small siderite crystals on small carbonaceous slickensided surfaces, relatively clean sandstone with carbonaceous and muddy laminations |            |
| 26      |                          | 71.47 | 72.57 | 1.1                |                    |                  | Sandstone                               | as above                                                                                                                                                                                                                                                                                                                                                                                                       |            |
| 27      |                          | 72.57 | 72.78 | .21                |                    |                  | Sandstone                               | as above, carbonaceous wood imprint towards base, sharp irregular erosional basal contact with mudstone below                                                                                                                                                                                                                                                                                                  |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                      | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                      |            |
| 27      |         | 72.78 | 73.10 | .32                 |                     |                  | Coaly Mudstone         | silty at top, tiny calcite stringers at base                                                                                                                         |            |
| 27      |         | 73.1  | 73.47 | .37                 |                     |                  | Sandstone              | very fine grained, dirty, silty at base, bioturbation, coaly plant fragments                                                                                         |            |
| 27      |         | 73.47 | 74.44 | .97                 |                     |                  | Mudstone               | very dark grey, carbonaceous with numerous coaly stringers, plant fragments throughout, becomes silty at base and sandy in bottom 2 cm, silty and gradational at top |            |
| 27      |         | 74.44 | 75.28 | .84                 |                     | 75.28            | Mudstone               | with silty interbeds, medium grey, rare carbonaceous plant fragments                                                                                                 |            |
| 28      |         | 75.28 | 75.66 | .38                 |                     |                  | Mudstone               | as above                                                                                                                                                             |            |
| 28      |         | 75.66 | 76.00 | .34                 |                     |                  | Mudstone               | dark grey, very carbonaceous, plant fragments throughout, coaly stringers                                                                                            |            |
|         |         | 76.00 | 76.13 | .13                 |                     |                  | Lost Coal              |                                                                                                                                                                      |            |
| 28      |         | 76.13 | 76.29 | .16                 |                     |                  | Coal                   | dull with some bright stringers, sheared at about 40° to bedding, broken in blocky pieces                                                                            |            |
|         |         | 76.29 | 76.64 | .35                 |                     |                  | Lost Core              |                                                                                                                                                                      |            |
| 28      |         | 76.64 | 76.87 | .23                 |                     |                  | Coal with Mudstone     | dull and bright, sheared, highly broken into small pieces, small size of pieces make it difficult to distinguish the coal/mudstone relationship                      |            |
| 28      |         | 76.87 | 76.90 | .03                 |                     |                  | Mudstone               | bright coal wisps throughout                                                                                                                                         |            |
|         |         | 76.90 | 76.93 | .03                 |                     |                  | Lost Coal              |                                                                                                                                                                      |            |
| 28      |         | 76.93 | 77.02 | .09                 |                     |                  | Coal                   | powdered and small pieces, bright and dull                                                                                                                           |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION      |                                                                                                                                                                                                                                                                                                                                   | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                        | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                   |            |
| 28      |         | 77.02 | 77.11 | .09                |                    |                  | Mudstone                    | carbonaceous plant fragments throughout, powdered and broken, medium dark gray                                                                                                                                                                                                                                                    |            |
| 28      |         | 77.11 | 77.14 | .03                |                    |                  | Coaly Mudstone              | thick (1/2 centimeter) bright bands                                                                                                                                                                                                                                                                                               |            |
| 28      |         | 77.14 | 77.28 | .14                |                    |                  | Mudstone                    | carbonaceous with thin coaly wisps and some bright bands throughout, broken at base                                                                                                                                                                                                                                               |            |
| 28      |         | 77.28 | 77.73 | .45                |                    | 78.3             | Mudstone/<br>Coaly Mudstone | coaly plant fragments throughout, at top of unit mudstone contains thin coaly wisps with occasional thin bright coal bands, amount of coal increases downward, grades to coaly mudstone for bottom 20 cm, some thin non-coaly mudstone lenses in bottom 10 cm, minor polished surfaces, siderite mineralization on cleat surfaces |            |
| 28      |         | 77.73 | 77.80 | .07                |                    |                  | Coal                        | bright with conchoidal fracture for top 4.5 cm; bright and sheared on planar cleat surfaces for bottom 2.5 cm                                                                                                                                                                                                                     |            |
| 28      |         | 77.80 | 77.87 | .07                |                    |                  | Coal                        | dull lustrous with pearly bright bands and 0.5 cm thick bright bands, thin mudstone lenses throughout                                                                                                                                                                                                                             |            |
| 28      |         | 77.87 | 78.02 | .15                |                    |                  | Mudstone                    | coaly with thin coal bands                                                                                                                                                                                                                                                                                                        |            |
| 28      |         | 78.02 | 78.08 | .06                |                    |                  | Coal                        | bright banded, broken at base                                                                                                                                                                                                                                                                                                     |            |
| 28      |         | 78.08 | 78.14 | .06                |                    |                  | Coal/Mudstone               | dull banded, calcite wisps associated with polished surfaces at base                                                                                                                                                                                                                                                              |            |
| 28      |         | 78.14 | 78.36 | .22                |                    |                  | Mudstone                    | dark gray, carbonaceous and coaly, carbonaceous plant remains throughout, ground at top, cm sized silty band in middle-slightly burrowed                                                                                                                                                                                          |            |
| 29      |         | 78.36 | 78.41 | .05                |                    |                  | Mudstone                    | medium gray, coaly wisps associated with occasional carbonaceous plant fragments throughout                                                                                                                                                                                                                                       |            |



| Box No. | BCA (°) | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                          | Sample No.   |
|---------|---------|-------------|----|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|         |         | From        | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                          |              |
|         |         | 78.41-78.57 |    | .16                |                    |                  | Lost Coal              |                                                                                                                                                                                                                                          |              |
| 29      |         | 78.57-78.65 |    | .08                |                    |                  | Coal                   | bright, completely broken into small pieces, somewhat sheared, (likely core loss)                                                                                                                                                        |              |
| 29      |         | 78.65-78.97 |    | .32                |                    | 79.4             | Coaly Mudstone         | bright thin wisps to cm thick bright coal bands throughout. Occasional 1 to 3 cm thick dull banded coal interbeds, occasional carbonaceous mudstone interbeds to 2 cm thick contain carbonaceous plant fragments, approximately 25% coal |              |
| 29      |         | 78.97-79.34 |    | .37                |                    |                  | Mudstone               | dark gray, carbonaceous plant fragments throughout, thin coal wisps and thin bright coal bands throughout, 10 cm thick coaly mudstone interbed - 10 cm from top, diffuse tonstein band in bottom 3 centimeters                           |              |
|         |         | 79.34-79.44 |    | .10                |                    |                  | Lost coal              |                                                                                                                                                                                                                                          |              |
| 29      |         | 79.44-79.62 |    | .18                |                    |                  | Coal                   | bright banded, 1 cm thick faint tonstein 3 cm from top, grades to unit below                                                                                                                                                             |              |
|         |         |             |    |                    |                    |                  | SAMPLE                 | <u>Seam One, Ply one</u> , all coal between 76.00 meters and 79.62 meters                                                                                                                                                                |              |
| 29      |         | 79.62-79.83 |    | .21                |                    |                  | Coaly Mudstone         | very coaly at top, grades down to unit below, ground near top                                                                                                                                                                            | Bulk Maceral |
| 29      |         | 79.83-80.24 |    | .41                |                    |                  | Mudstone               | dark gray, carbonaceous, abundant plant remains, coaly stringers, occasional polished surfaces, broken near base                                                                                                                         |              |
|         |         | 80.24-80.46 |    | .22                |                    |                  | Lost Coal              |                                                                                                                                                                                                                                          |              |
|         |         | 80.46-80.54 |    | .08                |                    |                  | Lost Core              |                                                                                                                                                                                                                                          |              |
| 29      |         | 80.54-80.77 |    | .23                |                    | 81.07            | Coal                   | bright with occasional dull bands, grades to mudstone in bottom centimeter, polished joint surface 45° to core axis                                                                                                                      |              |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                     | Sample No.     |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                     |                |
| 29      |         | 80.77 | 80.79 | .02                 |                     |                  | Ash Band 1             | light gray/brown color, fine carbonaceous laminae, micaceous, soft, soapy surface feel, polished shear surface 45° to core axis, sharp contacts above and below                                                                     | Kilby          |
| 29      |         | 80.79 | 80.93 | .14                 |                     |                  | Coal                   | bright banded                                                                                                                                                                                                                       |                |
| 29      |         | 80.93 | 81.00 | .07                 |                     |                  | Ash Band 2             | as above (Ash Band 1), slightly less carbonaceous                                                                                                                                                                                   | Kilby          |
| 29      |         | 81.00 | 81.08 | .08                 |                     |                  | Coal                   | dull banded, sheared                                                                                                                                                                                                                |                |
|         |         |       |       |                     |                     |                  | SAMPLE                 | <u>seam one-ply two</u> , all coal between 80.54 and 81.08 meters                                                                                                                                                                   | Bulk Maceral ✓ |
| 29      |         | 81.08 | 81.21 | .13                 |                     |                  | Ash Band 3             | as above (Ash Band 1), carbonaceous at top, 2 cm thick coaly mudstone 7 cm from the top                                                                                                                                             | Kilby          |
|         |         | 81.21 | 81.28 | .07                 |                     |                  | Lost Coal              |                                                                                                                                                                                                                                     |                |
| 29      |         | 81.28 | 81.37 | .09                 |                     |                  | Coal                   | dull and sheared                                                                                                                                                                                                                    |                |
| 30      |         | 81.37 | 81.49 | .12                 |                     |                  | Coal                   | dull with occasional bright bands, bottom half with vertical calcite veinlets and sheared appearance - pearly texture and slightly muddy                                                                                            |                |
| 30      |         | 81.49 | 81.65 | .16                 |                     |                  | Coal                   | bright banded, crispy, good irregular cleat                                                                                                                                                                                         |                |
|         |         |       |       |                     |                     |                  | Sample                 | <u>seam one-ply three</u> , all coal between 81.21 and 81.65 meters                                                                                                                                                                 | Bulk Maceral ✓ |
| 30      |         | 81.65 | 83.26 | 1.61                |                     |                  | Mudstone               | coaly in upper most 10 cm, silty in places, moderately broken in large pieces, sandy at base and middle, occasional carbonaceous plant fragments and rootlets, few polished surfaces parallel to bedding, faintly laminated at base |                |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                            | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                            |            |
| 30      |         | 83.26 | 84.00 | .74                 |                     | 84.12            | Siltstone/<br>Sandstone | medium gray color, occasional mudstone interbeds and laminations and crossbeds, rare carbonaceous plant fragments                                                                                          |            |
| 31      |         | 84.00 | 86.29 | 2.29                |                     |                  | Sandstone/<br>Siltstone | up to fine grained sandstone, medium bedded, cross-laminated, carbonaceous, occasional large coaly plant fragments, roots, muddy in places, sandy in bottom 20 cm, in general interbeds are 10-20 cm thick |            |
| 31      |         | 86.29 | 86.66 | .37                 |                     | 87.2             | Sandstone               | as above, upper fine grained, carbonaceous laminae and occasional roots                                                                                                                                    |            |
| 32      |         | 86.66 | 89.34 | 2.68                |                     |                  | Sandstone/<br>Siltstone | as above, occasional polished surfaces, six 2 cm thick bands of calcite stringers subparallel to bedding                                                                                                   |            |
| 32      |         | 89.34 | 89.46 | .12                 |                     | 90.3             | Sandstone/<br>Siltstone | as above                                                                                                                                                                                                   |            |
| 32      |         | 89.46 | 92.30 | 2.84                |                     |                  | Sandstone/<br>Siltstone | as above, occasional bands containing wispy calcite, numerous roots (general in sandstones), siltstone are more mottled and carbonaceous than sandstones                                                   |            |
| 34      |         | 92.30 | 92.38 | .08                 |                     | 93.26            | Sandstone/<br>Siltstone | as above                                                                                                                                                                                                   |            |
| 34      |         | 92.38 | 94.94 | 2.56                |                     |                  | Sandstone/<br>Siltstone | as above, slightly muddier                                                                                                                                                                                 |            |
| 35      |         | 94.94 | 95.43 | .49                 |                     |                  | Sandstone               | minor siltstone, as above                                                                                                                                                                                  |            |
| 35      | 80°     | 95.43 | 97.74 | 2.31                |                     | 96.32            | Sandstone/<br>Siltstone | as above, micro-faulting and calcite infilling in upper half, 0.6 m silty dark grey carbonaceous mudstone at base, to upper fine grained, thin cross beds, right way up                                    |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                            | Sample No.        |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                            |                   |
| 36      |         | 97.74  | 97.94  | .20                 |                     |                  | Sandstone              | as above, sharp erosional contact at base, lower coarse/upper fine grained, low angle cross-bedding, the base of this sandstone is the bottom of a fining upward cyclothem, the top of which is the "ratty" coal seam [Transitional facies (point bar/overbank) (with minor episodes of channeling). Relatively quiet low energy sediment (ie rooted sandstone, siltstone) predominated over clean higher energy cross-bedded sandstones.] | VIT 3<br>Kilby #4 |
| 36      |         | 97.94  | 98.17  | .23                 |                     |                  | Mudstone               | carbonaceous, coaly stringers, bottom half is sheared and slickensided with calcite stringers and broken throughout [likely core loss]                                                                                                                                                                                                                                                                                                     |                   |
|         |         | 98.17  | 98.74  | .57                 |                     |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |
| 36      |         | 98.74  | 99.13  | .39                 |                     | 99.36            | Mudstone               | coaly throughout, 5 cm ash band, 5 cm from top, 10 cm coal directly below ash band, coal is dull and bright with thin muddy lenses                                                                                                                                                                                                                                                                                                         |                   |
| 36      |         | 99.13  | 100.79 | 1.66                |                     |                  | Mudstone/<br>Siltstone | minor thin fine grained sandstone bands, quite carbonaceous and rooted throughout, occasional wispy calcite stringers throughout, towards base, ash content increases                                                                                                                                                                                                                                                                      |                   |
| 37      |         | 100.79 | 101.76 | .97                 |                     |                  | Mudstone               | sometimes silty, medium grey brown to medium grey, interlaminated with ash throughout, carbonaceous plant fragments and roots, occasional scattered zones of wispy calcite.                                                                                                                                                                                                                                                                |                   |
| 37      |         | 101.76 | 103.16 | 1.40                |                     | 102.4            | Mudstone               | as above                                                                                                                                                                                                                                                                                                                                                                                                                                   |                   |
| 37      |         | 103.16 | 103.28 | .12                 |                     |                  | Ash Band #5            |                                                                                                                                                                                                                                                                                                                                                                                                                                            |                   |
| 37      |         | 103.28 | 103.56 | .28                 |                     |                  | Mudstone               | medium olive grey, non-silty, occasional tiny plant fragments, fractures into very small irregular pieces throughout (crackly fracture), occasional polished surfaces, soft, waxy appearance, carbonaceous at base                                                                                                                                                                                                                         | Kilby<br>Esso     |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                            | Sample No.         |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                            |                    |
| 38      |         | 103.56 | 103.77 | .21                |                    |                  | Mudstone               | medium dark gray, carbonaceous plant fragments, coaly laminae near base, polished surfaces throughout especially lower half where sideritic mineralization occurs on polished slickensided surfaces, core is cut at bottom contact or contact is lost                                                                                                      | VIT #4 ✓           |
| 38      |         | 103.77 | 104.31 | .54                |                    |                  | Coal                   | dull banded, bright bands up to 1 cm thick (usually less than 1 cm), fusain occurs as soft powdery lenses (less than 1/2 cm) and fusainous plant fragments on horizontal planar surfaces, moderately well cleated throughout especially in bright bands, occasional polished surfaces with siderite mineralization, good stick core, coal has pearly sheen |                    |
|         |         | 104.31 | 104.62 | .31                |                    |                  | Lost Coal              |                                                                                                                                                                                                                                                                                                                                                            |                    |
| 38      |         | 104.62 | 104.91 | .29                |                    |                  | Coal                   | bright, crisp, moderate cleat, entirely broken and powdered (possible core loss)                                                                                                                                                                                                                                                                           |                    |
| 38      |         | 104.91 | 104.99 | .08                |                    |                  | Coal                   | bright and dull, crisp, sheared throughout, slightly broken                                                                                                                                                                                                                                                                                                |                    |
| 38      |         | 104.99 | 105.12 | .13                | 105.76             |                  | Coal                   | bright and dull, very broken, mostly powder                                                                                                                                                                                                                                                                                                                |                    |
|         |         | 105.12 | 105.21 | .09                |                    |                  | Lost Coal              |                                                                                                                                                                                                                                                                                                                                                            |                    |
| 38      |         | 105.21 | 105.34 | .13                |                    |                  | Ash Band #6            | carbonaceous, dark brown, sheared throughout                                                                                                                                                                                                                                                                                                               |                    |
|         |         |        |        |                    |                    |                  | SAMPLE                 | <u>seam 2 ply I</u> -all coal between 103.77-105.21 meters                                                                                                                                                                                                                                                                                                 |                    |
| 38      |         | 105.34 | 105.45 | .11                |                    |                  | Coal                   | dull and bright powder, exact location in interval is unknown                                                                                                                                                                                                                                                                                              |                    |
|         |         |        |        |                    |                    |                  |                        |                                                                                                                                                                                                                                                                                                                                                            | Kilby Bulk Maceral |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                       | Sample No.     |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                       |                |
|         |         | 105.45-106.48 |    | 1.03                |                     |                  | Lost Coal              |                                                                                                                       |                |
| 38      |         | 106.48-106.71 |    | .23                 |                     |                  | Coal                   | dull with bright bands, sheared throughout, broken in small pieces and powdered                                       |                |
| 38      |         | 106.71-106.76 |    | .05                 |                     |                  | Coal                   | dull and fusainous throughout, fusainous plant fragments, powdery, slightly muddy in center                           |                |
| 38      |         | 106.76-106.81 |    | .05                 |                     | 107.4            | Coal                   | dull and bright, sheared throughout, broken                                                                           |                |
|         |         |               |    |                     |                     |                  | SAMPLE                 | <u>seam 2 ply II</u> , all coal between 105.34-107.31 meters                                                          | Bulk Maceral ✓ |
|         |         | 106.81-107.31 |    | 0.50                |                     |                  | Lost Coal              |                                                                                                                       |                |
| 38      |         | 107.31-107.37 |    | .06                 |                     |                  | Ash Band #7            | muddy, dark grey brown, carbonaceous, sheared throughout (pearly) lustrous polished surfaces, siderite mineralization | Kilby          |
|         |         |               |    |                     |                     |                  | SAMPLE                 | <u>seam 2, ply III</u> , all coal between 107.37-113.46 meters                                                        | Bulk Maceral ✓ |
|         |         | 107.37-107.86 |    | .49                 |                     |                  | Lost Core              |                                                                                                                       |                |
| 38      |         | 107.86-108.22 |    | .36                 |                     |                  | Coal                   | dull and bright, sheared, broken and powdered, throughout                                                             |                |
| 38      |         | 108.22-108.30 |    | .08                 |                     |                  | Coal                   | dull with bright stringers, heavily sheared throughout at high angle to core axis                                     |                |
| 38      |         | 108.30-108.47 |    | .17                 |                     |                  | Coal                   | dull with bright bands, sheared                                                                                       |                |
| 38      |         | 108.47-108.83 |    | .36                 |                     | 108.81           | Coal                   | dull banded, sheared, a 1 cm thick irregularly shaped nodule of ash band at center                                    |                |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                  | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                  |            |
| 39      |         | 108.83 | 108.88 | .05                |                    |                  | Coal                   | dull lustrous with some bright stringers, hard, commonly sheared                                                 |            |
| 39      |         | 108.88 | 109.09 | .21                |                    |                  | Coal                   | dull with bright bands, rare 2 mm size muddy lenses, sheared and polished in places                              |            |
| 39      |         | 109.09 | 109.14 | .05                |                    |                  | Coal                   | highly sheared, broken and powdered                                                                              |            |
| 39      |         | 109.14 | 109.52 | .38                |                    |                  | Coal                   | dull with bright bands, sheared in places, generally poor cleat, good stick core                                 |            |
| 39      |         | 109.52 | 109.67 | .15                |                    |                  | Coal                   | dull with bright bands, sheared, broken and somewhat powdered                                                    | VIT #5 ✓   |
|         |         | 109.67 | 109.83 | .16                |                    |                  | Lost Core              |                                                                                                                  |            |
| 39      |         | 109.83 | 109.88 | .05                |                    |                  | Coal                   | dull and bright powder                                                                                           |            |
| 39      |         | 109.88 | 109.96 | .08                |                    |                  | Coal                   | dull with bright stringers, a few wisps of fusain, hard but sheared throughout, traces of calcite mineralization |            |
| 39      |         | 109.96 | 110.02 | .06                |                    | 11.03            | Coal                   | dull with bright stringers, as above                                                                             |            |
| 39      |         | 110.02 | 110.34 | .32                |                    |                  | Coal                   | dull banded, sheared, moderate to very well developed cleat, mm size fusain lens, good stick core                |            |
| 39      |         | 110.34 | 110.55 | .21                |                    |                  | Coal                   | dull and bright with occasional mm sized fusain lenses                                                           |            |
| 39      |         | 110.55 | 110.6  | .05                |                    |                  | Coal                   | dull and bright, very sheared throughout, calcite mineralization                                                 |            |
| 40      |         | 110.6  | 110.72 | .12                |                    |                  | Coal                   | dull banded, sheared, rare thin fusain lenses                                                                    |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                          | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                          |            |
| 40      |         | 110.72 | 111.07 | .35                 |                     |                  | Coal                   | dull lustrous with bright bands, sheared throughout especially towards bottom, broken at bottom, rare clacite and siderite mineralization                |            |
|         |         | 111.07 | 111.16 | .09                 |                     |                  | Lost Coal              |                                                                                                                                                          |            |
| 40      |         | 111.16 | 111.27 | .11                 |                     |                  | Coal                   | powdered, dull and bright pieces                                                                                                                         |            |
|         |         | 111.27 | 111.52 | .25                 |                     |                  | Lost Coal              |                                                                                                                                                          |            |
| 40      |         | 111.52 | 111.63 | .11                 |                     | 111.86           | Coal                   | dull with bright bands, occasional thin fusain lenses, sheared lustrous surfaces throughout                                                              |            |
| 40      |         | 111.63 | 112.08 | .45                 |                     |                  | Coal                   | dull lustrous with brights bands, pearly sheen, broken in very large pieces, very sheared throughout obliterating nature of the coal, no cleat, crisp    |            |
| 40      |         | 112.08 | 112.19 | .11                 |                     |                  | Coal                   | dull with bright bands, occasional thin fuscain lenses, lustrous sheared surfaces throughout                                                             |            |
| 40      |         | 112.19 | 112.71 | .52                 |                     |                  | Coal                   | dull lustrous with pearly sheen (comparatively light) very sheared obliterating nature of coal, no cleat, crisp, powdery siderite mineralization at base |            |
|         |         | 112.71 | 113.08 | .37                 |                     |                  | Lost Coal              |                                                                                                                                                          |            |
| 40      |         | 113.08 | 113.46 | .38                 |                     | 113.8            | Coal                   | dull with bright bands, sheared throughout, siderite coated surfaces, bottom contact is lost, broken in large peices. Bottom of seam.                    | VIT #6 ✓   |
| 40      | 80      | 113.46 | 113.52 | .06                 |                     |                  | Carbonaceous Mudstone  | coaly fragments, medium dark grey brown, carbonaceous plant fragments on bedding surfaces                                                                |            |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                       | Sample No.         |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                       |                    |
| 41      |         | 113.52 | 114.20 | .68                |                    |                  | Sandstone/<br>Mudstone  | very thin interbeds and interlaminations, abundant carbonaceous leaf and plant imprints, occasional polished surfaces, calcite and pyrite mineralization                                                              |                    |
| 41      | 80      | 114.20 | 114.9  | .70                |                    | 114.91           | Sandstone/<br>Siltstone | muddy and carbonaceous, very thin interbeds and interlaminations, common carbonaceous leaf and plant imprints, rooted and mottled bedding in places, sharp basal contact                                              |                    |
| 41      |         | 114.90 | 115.27 | .37                |                    |                  | Mudstone                | medium dark grey, common carbonaceous plant fragments, more carbonaceous towards base                                                                                                                                 |                    |
| 41      |         | 115.27 | 115.30 | .03                |                    |                  | Coaly Mudstone          |                                                                                                                                                                                                                       |                    |
| 41      |         | 115.30 | 115.35 | .05                |                    |                  | Coal                    | sheared and broken throughout, dull and bright fragments                                                                                                                                                              |                    |
| 41      |         | 115.35 | 116.18 | .83                |                    |                  | Mudstone                | top 3 cm are coaly, abundant calcite stingers parallel to bedding in upper 25 cm, medium grey, silty in places, abundant tiny plant fragments in upper half, crackly fracture in lower half and less carbonaceous     |                    |
| 41      |         | 116.18 | 117.20 | 1.02               |                    |                  | Mudstone/<br>Siltstone  | medium grey mudstone with rare plant fragments, grades downward to a medium grey siltstone, upper muddy half contains numerous tiny "horizontal" calcite infilled burrows giving the core a white speckled appearance |                    |
| 42      |         | 117.20 | 117.65 | .45                |                    | 117.95           | Sandstone/<br>Siltstone | carbonaceous with plant fragments, bottom 10 cm is very muddy                                                                                                                                                         |                    |
|         |         | 117.65 | 117.70 | .05                |                    |                  | Lost Coal               |                                                                                                                                                                                                                       |                    |
| 42      |         | 117.70 | 117.77 | .07                |                    |                  | Coal                    | bright, sheared throughout, crisp, trace calcite on sheared surfaces                                                                                                                                                  | VIT #7<br>118.49 ✓ |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                      | Sample No.        |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                      |                   |
| 42      |         | 117.77 | 117.83 | .06                |                    |                  | Coal                    | broken in small pieces, small dull and bright fragments                                                                                                                                                                                              |                   |
| 42      |         | 117.83 | 118.05 | .22                |                    |                  | Coal                    | bright coal, very lustrous with bright bands, small fusain twig                                                                                                                                                                                      |                   |
|         |         | 118.05 | 118.16 | .11                |                    |                  | Coaly Mudstone          |                                                                                                                                                                                                                                                      |                   |
|         |         | 118.16 | 118.36 | .20                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                      |                   |
| 42      |         | 118.36 | 118.59 | .23                |                    |                  | Mudstone                | very coaly at top                                                                                                                                                                                                                                    |                   |
| 42      |         | 118.59 | 119.00 | .41                |                    |                  | Mudstone                | medium grey, coaly plant fragments, silty                                                                                                                                                                                                            |                   |
| 43      |         | 119.00 | 120.29 | 1.29               |                    |                  | Siltstone               | minor thin mudstone interbeds, 2 cm thick ash band 25 cm from bottom, 5 cm of coaly mudstone 40 cm from bottom, coaly mudstone is very broken, carbonaceous throughout with coaly plant imprints, one cm broken coaly mudstone pieces 30 cm from top | Kilby Ash Band #8 |
|         |         | 120.29 | 120.32 | .03                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                      |                   |
| 43      |         | 120.32 | 120.70 | .38                | 121.00             |                  | Siltstone               | as above, becomes sandy towards base, sharp undulating basal contact                                                                                                                                                                                 |                   |
| 43      | 70°     | 120.70 | 121.55 | .85                |                    |                  | Sandstone               | upper fine grained, parallel bedded, faint laminations, slightly carbonaceous, medium light to medium grey, disseminated pyrite near base, sharp basal contact                                                                                       |                   |
| 43      |         | 121.55 | 121.61 | .06                |                    |                  | Sandstone/<br>Siltstone | up to fine grained sands with low angle cross laminations, carbonaceous, rooted in places, 10-40 cm thick beds                                                                                                                                       |                   |
| 44      |         | 121.61 | 123.34 | 1.73               |                    |                  | Sandstone/<br>Siltstone | as above, muddy in places, planar calcite lined joints throughout at low angle to core axis, broken in middle, muddy at base                                                                                                                         |                   |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                  | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                  |            |
| 44      |         | 123.34 | 123.92 | .58                |                    | 124.1            | Siltstone              | very muddy, very thin sandy laminae towards top, muddy and carbonaceous towards top, muddy and carbonaceous towards base                                                                                                                                                                         |            |
| 44      |         | 123.92 | 124.11 | .19                |                    |                  | Coal                   | dull with bright stringers, calcite lined, sheared and polished surfaces throughout, very broken, occasional scattered muddy pieces                                                                                                                                                              |            |
| 44      |         | 124.11 | 124.21 | .10                |                    |                  | Coaly Mudstone         |                                                                                                                                                                                                                                                                                                  |            |
| 44      |         | 124.21 | 124.74 | .53                |                    |                  | Lost Coal              | with numerous mudstone partings                                                                                                                                                                                                                                                                  |            |
| 45      |         | 124.74 | 126.31 | 1.57               |                    |                  | Siltstone              | muddy in places, sandy in places, well preserved carbonaceous fern leaf fossil, carbonaceous plant fragments, muddy at base 1.05 m from base is a centimeter of coal powder and broken coal pieces, 30 cm from base is a 10 cm thick sandstone band                                              |            |
| 45      |         | 126.31 | 127.23 | .92                |                    |                  | Mudstone               | carbonaceous throughout, coaly bands and broken in upper 20 cm, grades down to a fine sand 20 cm from base, medium dark grey, common plant fragments                                                                                                                                             |            |
| 46      |         | 127.23 | 127.87 | .64                |                    |                  | Mudstone               | minor thin siltstone/sandstone interbeds, silty with coaly plant fragment towards base, medium dark grey, darker and fewer plant fragments                                                                                                                                                       |            |
| 46      |         | 127.87 | 129.23 | 1.36               |                    |                  | Sandstone              | medium light grey, occasional coaly plant fragments, silty and carbonaceous towards top, mottled throughout, few sedimentary structures remain, few polished surfaces, medium grey color "dirty" sandstones in this unit are different than cleaner lighter colored sandstones higher in section |            |
| 46      |         | 129.23 | 129.83 | .60                |                    | 130.1            | Sandstone              | as above                                                                                                                                                                                                                                                                                         |            |
| 46      |         | 129.83 | 130.54 | .71                |                    |                  | Sandstone              | very agillaceous, medium grey bottom 15 cm is a quite coaly mudstone, very few plant fragments in sandstone                                                                                                                                                                                      |            |

ESSO RESOURCES CANADA LIMITED - COAL DIVISION  
CORE & COAL CORE DESCRIPTION

|          |               |
|----------|---------------|
| Project  | Falling Creek |
| Map Area | 930,93P       |

|       |          |
|-------|----------|
| Begin | 83 07 04 |
| End   | 83 07 06 |

|                  |           |
|------------------|-----------|
| Core Examiner(s) | B. Wright |
|------------------|-----------|

|          |       |
|----------|-------|
| Hole No. | 83-18 |
|----------|-------|

Hole Particulars

|             |                         |              |     |
|-------------|-------------------------|--------------|-----|
| Location    | 61 48275 mN<br>56265 mE |              |     |
| Elevation   | 1282 m                  |              |     |
| Total Depth | 200.90 m                | Hole Bearing | -   |
|             |                         | Hole Angle   | 90° |

Coal Coring Performance

|                |        |
|----------------|--------|
| Core Diameter  | HQ     |
| Core Recovered | 191.19 |
| Length Cored   | 200.57 |
| Core Recovery  | 95.3%  |

Logging

|                             |        |
|-----------------------------|--------|
| Logged By                   | B.P.B. |
| Gamma Density               |        |
| Neutron-Neutron             |        |
| Caliper Dipmeter            |        |
| Seam Thickness Coal Quality |        |

|                  |                          |
|------------------|--------------------------|
| Examination Date | 9th July to<br>12th July |
|------------------|--------------------------|

| Box No. | BCA (°) | Depth |      | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                   | Sample No. |
|---------|---------|-------|------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------|------------|
|         |         | From  | To   |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                   |            |
| 1       |         | 4.40  | 4.50 | .10                | .10                | 4.6              | Overburden             | CASING TO 4.4 METERS (according to B.P.B. log)<br>rubble and clay |            |
|         |         |       |      |                    |                    |                  | MOOSEBAR FORMATION     |                                                                   |            |
| 1       |         | 4.50  | 5.50 | 1.00               | 1.00               |                  | Lost Mudstone          | greyish brown, iron-stained, soft and clayey in places            |            |
|         |         | 5.50  | 5.68 | .18                | .18                |                  | Mudstone               |                                                                   |            |
| 1       |         | 5.68  | 5.73 | .05                | .05                |                  | Clay                   | pale brown, .soft                                                 |            |
|         |         | 5.73  | 5.96 | .23                | .23                |                  | Lost mudstone          |                                                                   |            |

|          |       |
|----------|-------|
| Hole No. | 83-18 |
|----------|-------|

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                         |            |
| 1       |         | 5.96  | 6.55  | .59                | .59                |                  | Mudstone               | as before, broken and rubbly at top, horizontal worm burrows, color is now dark grey (ie. non-iron stained), occasional calcite veinlets, crackly fracture on wetted surface, few concretionary lenses, broken in middle, worm burrows show up as darker grey flattened ovals of up to 3 mm in diameter |            |
| 1       |         | 6.55  | 7.29  | .74                | .74                | 6.40             | Mudstone               | as above, broken in places, microfaulting at base, long 1 mm thick iron-stained worm burrows on bedding planes                                                                                                                                                                                          |            |
| 2       |         | 7.29  | 8.22  | .93                | .93                |                  | Mudstone               | as above, 5 cm clay band near top, siderite and calcite on fracture surface, 1 cm wide piece of wood on bedding plane, tiny dark grey speckled horizontal worm burrows in a 10 cm band, 10 cm band of dark grey soft and clayey mud near base                                                           |            |
|         |         | 8.22  | 8.35  | .13                | .13                |                  | Lost Mudstone          |                                                                                                                                                                                                                                                                                                         |            |
| 2       |         | 8.35  | 9.83  | 1.48               | 1.48               | 8.2              | Mudstone               | as above, with 1 mm wide and 1 1/2 cm long pyrite-filled worm burrows, iron-staining on joint surfaces, broken at top and base, fractured irregularly, pyrite burrows are both horizontal and vertical, few slightly silty units with gradational contacts, small coaly plant fragment                  |            |
| 3       |         | 9.83  | 9.88  | .05                | .05                |                  | Clay & Mudstone        | rubble                                                                                                                                                                                                                                                                                                  |            |
|         |         | 9.88  | 9.95  | .07                | .07                |                  | Lost Mudstone          |                                                                                                                                                                                                                                                                                                         |            |
| 3       |         | 9.95  | 11.13 | 1.18               | 1.18               | 10.2             | Mudstone               | with pyritized worm burrows as above, fossil bivalve, 8 mm in diameter, round outline with narrow hinge, growth lines, pyritized                                                                                                                                                                        |            |
| 3       |         | 11.13 | 12.40 | 1.27               | 1.27               | 11.3             | Mudstone               | as above with pyrite worm burrows, pyrite filled necklace-like fracture, minor smooth (polished?) surfaces, fossil shell fragment, calcite lined joints                                                                                                                                                 |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                    | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                    |            |
| 4       |         | 12.40 | 13.90 | 1.50                | 1.50                |                  | Mudstone               | as above, rubbly at base, iron-stained joint surfaces, occasional silty intervals, calcite on joint surfaces, pyritized worm burrows (horizontal), polished surfaces (rare)                                                                                                                                        |            |
| 4       |         | 13.90 | 15.09 | 1.19                | 1.19                | 14.0             | Mudstone               | as above, iron-stained and calcite-coated joint surfaces, < 1 mm thick horizontal iron-stained lined mud-filled worm burrow, 2 cm diameter bivalve, flattened oval-shaped with growth lines (samples), horizontal and thin pyritized burrows, bivalve shell fragments (2), bivalve with irregular ribs (2 cm long) |            |
| 5       |         | 15.09 | 17.11 | 2.02                | 2.02                |                  | Mudstone               | as above, large ribbed bivalve (3 cm across), a few fossil shell fragments, calcite-lined and iron-stained joint surfaces                                                                                                                                                                                          |            |
| 5       |         | 17.11 | 17.87 | .76                 | .76                 | 17.2             | Mudstone               | as above, thin horizontal pyrite burrows, 3 cm bivalve shell, minor calcite on joint surfaces (iron-stained)                                                                                                                                                                                                       |            |
| 6       |         | 17.87 | 20.27 | 2.40                | 2.40                |                  | Mudstone               | as above, broken at base, calcite-lined and iron-stained joint surfaces, thin horizontal pyritized worm burrows, polished surfaces, 2 cm bivalve fossil, 1 cm round perfect bivalve with pointed hinge and growth lines                                                                                            |            |
| 6       |         | 20.27 | 20.52 | .25                 | .25                 | 20.3             | Mudstone               | as above, thin horizontal pyritized worm burrow, round bivalve as above, vertical pyrite-filled worm burrow, iron-stained calcite-lined joint surfaces                                                                                                                                                             |            |
| 7       |         | 20.52 | 21.98 | 1.46                | 1.46                |                  | Mudstone               | as above, broken in middle, 2 cm clayey soft mud band near base, calcite-lined iron-stained joint surfaces, up to 1 cm pyrite-filled horizontal worm burrows, few tiny vertical pyrite burrows, two rounded bivalve fossils as described in previous unit                                                          |            |
| 7       |         | 21.98 | 22.11 | .13                 | .13                 |                  | Mud & Rubble           |                                                                                                                                                                                                                                                                                                                    |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION     |                                                                                                                                                                                                         | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                       | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                         |            |
| 7       |         | 22.11 | 22.45 | .34                | .34                |                  | Mudstone                   | as above, polished surfaces, calcite-lined joints, horizontal mud-filled worm burrow (.5 cm wide)                                                                                                       | VIT 1 ✓    |
| 7       |         | 22.45 | 22.53 | .08                | .08                |                  | Mud & Rubble               |                                                                                                                                                                                                         |            |
| 7       |         | 22.53 | 23.23 | .70                | .70                | 23.0             | Mudstone                   | as above, highly broken at base, polished surfaces, calcite-lined joints and calcite-filled fractures, horizontal thin pyrite burrows                                                                   |            |
| 8       |         | 23.23 | 23.35 | .12                | .12                |                  | Mud & Rubble               |                                                                                                                                                                                                         |            |
| 8       |         | 23.35 | 24.27 | .92                | .92                |                  | Mudstone                   | as above, good stick, becoming silty towards base, pyritized woody fragment, 1 mm to .5 cm pyritized horizontal worm burrow, pyritized bivalve, bivalve remains, becoming very glauconitic towards base |            |
| 8       |         | 24.27 | 24.65 | .38                | .38                |                  | Glauconitic Silty Mudstone | glauconite occurs as disseminated flecks in bands roughly paralleling bedding, no burrows apparent, glauconite is bright green in color, also occurs as oval lenses, very abundant                      |            |
| 8       |         | 24.65 | 24.66 | .01                | .01                |                  | Coal                       | powdered, bright                                                                                                                                                                                        |            |
| 8       |         | 24.66 | 24.96 | .30                | .30                |                  | Glauconitic Silty Mudstone | as previously described                                                                                                                                                                                 |            |
| 8       | 90°     | 24.96 | 25.66 | .70                | .70                |                  | Siltstone                  | broken at base; argillaceous in places, large 1 cm vertical mud-filled worm burrow, bioturbated at top, bedding indistinct, faintly laminated at base with mudstone, polished surfaces                  |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                           |            |
| 8       |         | 25.66 | 25.84 | .18                | .18                | 26.2             | Mudstone/Siltstone     | up to 5 cm interbeds, bioturbated, horizontal worm burrows, .5 cm calcite vein at base, minor polished surfaces, disseminated pyrite on calcite vein                                                                                                                                                      |            |
| 9       | 90°     | 25.84 | 28.70 | 2.86               | 2.86               |                  | Mudstone/Siltstone     | as above, bioturbated, numerous small dark grey flattened oval horizontal worm burrows, fairly abrupt contacts between silt and mud, good stick, few horizontal .5 cm pyrite worm burrows, rare polished surfaces, few .5 cm vertical pyrite burrows, wavy bedding, light (silt) and dark (mud) interbeds |            |
| 10      |         | 28.70 | 28.81 | .11                | .11                |                  | Mudstone/Siltstone     | as above, few calcite-filled fractures                                                                                                                                                                                                                                                                    |            |
| 10      | 90°     | 28.81 | 31.45 | 2.64               | 2.64               | 29.4             | Mudstone/Siltstone     | as above, polished surfaces, ratio of mud to silt increased, small horizontal dark grey flattened oval worm burrows, minor calcite-filled fractures                                                                                                                                                       |            |
| 11      |         | 31.45 | 32.89 | .44                | .44                |                  | Mudstone/Siltstone     | as above, silty interbeds are becoming more rare, small horizontal dark grey flattened oval worm burrows                                                                                                                                                                                                  |            |
| 11      |         | 31.89 | 34.24 | 2.35               | 2.35               | 32.6             | Mudstone/Siltstone     | as above with the same burrows, good stick, rare polished carbonaceous-looking surfaces, few large (1 cm wide) vertical silt-filled burrows, silty lenses are discontinuous                                                                                                                               |            |
| 12      |         | 34.24 | 35.01 | .77                | .77                |                  | Mudstone               | with minor discontinuous siltstone interbeds, few horizontal pyrite burrows (and vertical), rare polished surfaces                                                                                                                                                                                        |            |
| 12      |         | 35.01 | 37.10 | 2.09               | 2.09               | 35.7             | Mudstone               | as above (entire description), large vertical joint at base                                                                                                                                                                                                                                               |            |
| 13      |         | 37.10 | 37.97 | .87                | .87                |                  | Mudstone               | as above, broken at base, horizontal pyrite burrows                                                                                                                                                                                                                                                       |            |



| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                               | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                               |            |
| 13      |         | 37.97 | 39.08 | 1.11               | 1.11               | 38.4             | Mudstone                | as above, very rare discontinuous siltstone bands                                                                                                                                                                                                                                                             |            |
| 13      | 90°     | 39.08 | 39.46 | .38                | .38                |                  | Pebbly Sandstone        | Sandstone Grit with chert pebbles, maximum pebble diameter is 1.5 cm, matrix supported, fine muddy matrix, coaly plant material on bedding plane, minor disseminated pyrite flecks and veinlets, only a few pebbles (not as conglomeratic as 83-17), appears to be very glauconitic (green) on fresh surface. |            |
|         |         |       |       |                    |                    |                  | Gething Formation       | bluesky equivalent                                                                                                                                                                                                                                                                                            |            |
| 13      | 90°     | 39.46 | 39.81 | .35                | .35                |                  | Siltstone/<br>Sandstone | siltstone is argillaceous, sandstone occurs as a 13 cm band in the center of the unit, sandstone is fine grained, laminated, carbonaceous stringers, minor polished surfaces                                                                                                                                  |            |
| 14      | 90°     | 39.81 | 41.11 | 1.30               | 1.30               |                  | Siltstone               | as above with 5 cm sandstone interbed at top, .5 cm calcite vein parallel to bedding in middle of unit, grades downward into mudstone, carbonaceous plant remains, rare polished surfaces                                                                                                                     |            |
| 14      |         | 41.11 | 41.60 | .49                | .49                | 41.5             | Mudstone                | carbonaceous with polished surfaces at base, slightly silty at top, thin calcite vein near base                                                                                                                                                                                                               |            |
| 14      |         | 41.60 | 41.92 | .32                | .32                |                  | Coal                    | bright and dull, sheared, fairly hard, some cleat is developed, for woody imprints                                                                                                                                                                                                                            |            |
|         |         | 41.92 | 42.20 | .28                | .28                |                  | Lost Coal               |                                                                                                                                                                                                                                                                                                               |            |
| 14      |         | 42.20 | 42.76 | .56                | .56                | 42.7             | Coal                    | good stick, bright and dull as above, cleat is well developed, minor calcite veinlets along cleat fracture, woody imprints, sheared in places                                                                                                                                                                 |            |
| 15      |         | 42.76 | 42.81 | .05                | .05                |                  | Coal                    | as above                                                                                                                                                                                                                                                                                                      |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                    | Sample No.             |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                    |                        |
| 15      |         | 42.81 | 43.21 | .40                | .40                | 43.2             | Coal                   | dull lustrous and bright, good stick, well developed cleat                                                                                                                                                         | Bulk Macerated VIT 2 ✓ |
|         |         |       |       |                    |                    |                  | Sample                 | <u>ply I</u> 41.60 - 43.21 meters, 1.61 m true thickness                                                                                                                                                           |                        |
| 15      |         | 43.21 | 43.41 | .20                | .20                |                  | Coaly Mudstone         | with .5 cm bright coal bands, polished surfaces, disseminated pyrite flecks                                                                                                                                        | Bulk ✓                 |
| 15      |         | 43.41 | 43.51 | .10                | .10                |                  | Coaly Mudstone         | as above, highly broken                                                                                                                                                                                            |                        |
|         |         | 43.51 | 43.62 | .11                | .11                |                  | Loam Mudstone          |                                                                                                                                                                                                                    |                        |
| 15      |         | 43.62 | 43.68 | .06                | .06                |                  | Mudstone               | carbonaceous, coal stringers, few calcite veinlets, polished surfaces                                                                                                                                              |                        |
| 15      |         | 43.68 | 43.73 | .05                | .05                | 44.2             | Mudstone               | as above                                                                                                                                                                                                           |                        |
| 15      |         | 43.73 | 44.00 | .27                | .27                |                  | Coaly Mudstone         | as previously described                                                                                                                                                                                            |                        |
|         |         |       |       |                    |                    |                  | Sample                 | <u>ply II</u> 43.21 - 44.00 meters, 0.79 m true thickness                                                                                                                                                          |                        |
| 15      |         | 44.00 | 45.47 | 1.47               | 1.47               |                  | Mudstone               | carbonaceous with bright coal bands, some silty horizons, carbonaceous plant remains, thin calcite veins in lower half, large woody plant remains                                                                  |                        |
| 16      |         | 45.47 | 46.48 | 1.01               | 1.01               |                  | Silty Mudstone         | with 10 cm very fine grained sandstone interbeds, sandstone displays soft sediment deformation, rootlets, flame structures, first laminations, long calcite coated vertical joints, few carbonaceous plant remains |                        |
| 16      | 90°     | 46.48 | 46.83 | .35                | .35                | 47.2             | Sandstone              | fine grained, laminated and cross-laminated, abrupt lower contact, thin calcite vein, 3 cm mudstone interbed in middle                                                                                             |                        |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                            | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                            |            |
| 16      | 90°     | 46.83 | 48.11 | 1.28               | 1.28               |                  | Mudstone               | dark grey, with 20 cm sandstone interbed as above near top, grades to carbonaceous mudstone at base, rare carbonaceous plant material                                                                                                                      |            |
| 16      |         | 48.11 | 48.32 | .21                | .21                |                  | Carbonaceous Mudstone  | black, polished surfaces, carbonaceous plant remains, minor calcite veinlets, few coal stringers                                                                                                                                                           |            |
| 17      |         | 48.32 | 48.48 | .16                | .16                |                  | Carbonaceous Mudstone  | as above                                                                                                                                                                                                                                                   |            |
| 17      |         | 48.48 | 49.30 | .82                | .82                |                  | Mudstone               | carbonaceous in places, 15 cm sandstone interbed (fine grained and laminated), rootlets in sandy band, wispy calcite veinlets, coaly stringers, carbonaceous plant remains                                                                                 |            |
| 17      |         | 49.30 | 49.32 | .02                | .02                |                  | Coal                   | powdered, muddy, some bright bits                                                                                                                                                                                                                          |            |
| 17      |         | 49.32 | 49.82 | .50                | .50                |                  | Mudstone               | as before, broken at base                                                                                                                                                                                                                                  |            |
| 17      |         | 49.82 | 51.18 | 1.36               | 1.36               | 50.3             | Mudstone/Sandstone     | mudstone has carbonaceous plant remains, sandstone is very fine grained laminated, rootlets, worm burrows (sand-filled) in the mudstone, flame structures, coal stringers in mudstone, sandstone interbeds are from 13-30 cm thick, wispy calcite veinlets |            |
| 18      | 90°     | 51.18 | 52.66 | 1.48               | 1.48               |                  | Mudstone/Sandstone     | as above, broken at base                                                                                                                                                                                                                                   |            |
| 18      |         | 52.66 | 53.04 | .38                | .38                |                  | Mudstone               | dark grey, carbonaceous, carbonaceous plant remains                                                                                                                                                                                                        |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                |            |
| 18      |         | 53.04 | 53.27 | .23                | .23                | 53.6             | Mudstone                | as above                                                                                                                                                                                                       |            |
| 18      |         | 53.27 | 53.40 | .13                | .13                |                  | Sandy Siltstone         | few carbonaceous plant remains, minor calcite on bedding planes                                                                                                                                                |            |
| 18      |         | 53.40 | 53.46 | .06                | .06                |                  | Mudstone                | as before, broken                                                                                                                                                                                              |            |
| 18      | 90°     | 53.46 | 53.89 | .43                | .43                |                  | Sandy Siltstone         | as before                                                                                                                                                                                                      |            |
| 19      | 90°     | 53.89 | 55.27 | 1.38               | 1.38               |                  | Siltstone/<br>Sandstone | interlaminated, numerous rootlets, wispy calcite veinlets, sandstone is very fine grained, polished surfaces, numerous carbonaceous plant remains, pyrite platelets on fracture surfaces, rare coaly stringers |            |
| 19      |         | 55.27 | 56.17 | .90                | .90                |                  | Mudstone                | carbonaceous with coal stringers, few 2-5 cm very fine grained sandstone interbeds, rootlets, wispy calcite veinlets                                                                                           |            |
| 19      |         | 56.17 | 56.64 | .47                | .47                | 56.7             | Mudstone                | as above with no sandstone interbeds, becoming very carbonaceous and coaly at base, coal stringers throughout, wispy calcite veinlets, pyrite plates on fractures                                              |            |
| 20      |         | 56.64 | 57.03 | .39                | .39                |                  | Mudstone                | as above                                                                                                                                                                                                       |            |
| 20      |         | 57.03 | 57.06 | .03                | .03                |                  | Coal                    | powdered and bright                                                                                                                                                                                            |            |
| 20      |         | 57.06 | 57.66 | .60                | .60                |                  | Mudstone                | as before                                                                                                                                                                                                      |            |
| 20      |         | 57.66 | 57.68 | .02                | .02                |                  | Coal                    | powdered, muddy, few bright specks                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                             | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                             |            |
| 20      |         | 57.68 | 58.48 | .80                 | .80                 |                  | Mudstone               | as before, mudstones are highly carbonaceous and coaly nearest the coal bands, rubbly at base                                                                                                               |            |
| 20      |         | 58.48 | 58.75 | .27                 | .27                 | 58.8             | Mudstone               | as before, pulverized and broken at base                                                                                                                                                                    |            |
| 20      |         | 58.75 | 59.11 | .36                 | .36                 |                  | Silty Mudstone         | with occasional 5 cm fine grained and laminated sandstone interbeds, highly broken, calcite veining and minor brecciation, polished surfaces, some carbonaceous laminae                                     |            |
| 21      |         | 59.11 | 59.45 | .34                 | .34                 |                  | Silty Mudstone         | as above, highly broken                                                                                                                                                                                     |            |
| 21      |         | 59.45 | 59.73 | .28                 | .28                 |                  | Silty Mudstone         | as before, entirely broken                                                                                                                                                                                  |            |
| 21      |         | 59.73 | 60.00 | .27                 | .27                 |                  | Silty Mudstone         | as above, broken at base                                                                                                                                                                                    |            |
| 21      | 55°     | 60.00 | 61.48 | 1.48                | 1.21                | 60.7             | Sandstone              | very fine grained, cross-laminated, calcite veining, muddy laminations, extensive rooting, very broken in places, bedding has steepened here, carbonaceous surfaces, polished surfaces, slickensides at top |            |
|         |         | 61.48 | 61.78 | .30                 | .25                 |                  | Lost Sandstone         |                                                                                                                                                                                                             |            |
| 22      |         | 61.78 | 62.33 | .55                 | .45                 |                  | Silty Mudstone         | as before with a few sandy laminations, rootlets, broken and pulverized at base, carbonaceous plant remains, calcite veinlets, soft-sediment deformation, polished surfaces                                 |            |
|         |         | 62.33 | 62.43 | .10                 | .08                 |                  | Lost Silty Mudstone    |                                                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                            | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                            |            |
| 22      |         | 62.43 | 64.53 | 2.10                | 1.72                | 63.1             | Mudstone               | slightly silty at top, becoming very carbonaceous with 1 cm coal bands in middle, broken in places, wispy calcite veinlets, muddy clay band in middle, numerous carbonaceous plant remains |            |
|         |         | 64.53 | 64.69 | .16                 | .13                 |                  | Lost Mudstone          |                                                                                                                                                                                            |            |
| 23      |         | 64.69 | 65.10 | .41                 | .34                 |                  | Mudstone               | as above                                                                                                                                                                                   |            |
| 23      |         | 65.10 | 65.53 | .43                 | .35                 |                  | Silty Mudstone         | with a few 3 cm very fine grained sandstone interbeds at top, rootlets, calcite veinlets at top                                                                                            |            |
| 23      |         | 65.53 | 66.98 | 1.45                | 1.19                | 66.1             | Silty Mudstone         | as above, minor calcite brecciation near top, not sandy in lower half, rootlets, few carbonaceous surfaces (BCA's are unreliable)                                                          |            |
| 24      |         | 66.98 | 68.35 | 1.37                | 1.12                |                  | Silty Mudstone         | as above, no sandy interbeds, minor calcite veining in lower half, polished surfaces, rare carbonaceous plant fragments, broken at base                                                    |            |
|         |         | 68.35 | 68.50 | .15                 | .12                 |                  | Lost Silty Mudstone    |                                                                                                                                                                                            |            |
| 24      |         | 68.50 | 69.95 | 1.35                | 1.11                | 69.2             | Mudstone               | non-silty, polished surfaces, some calcite on these surfaces, grey-black color rare carbonaceous plant remains, broken in middle, calcite veins up to .5 cm wide at top and base           |            |
|         |         | 69.95 | 70.00 | .15                 | .12                 |                  | Lost Mudstone          |                                                                                                                                                                                            |            |
| 25      |         | 70.00 | 70.05 | .05                 | .04                 |                  | Coal (Sample)          | bright, well developed cleat                                                                                                                                                               | VIT 3      |
|         |         | 70.05 | 70.20 | .15                 | .12                 |                  | Lost Coal              |                                                                                                                                                                                            |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                              | Sample No.           |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------|----------------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                              |                      |
| 25      |         | 70.20 | 70.24 | .04                | .03                |                  | Coaly Mudstone         | with bright coal bands                                                                       | Bulk Macerdl VIT 3 ✓ |
| 25      |         | 70.24 | 70.32 | .08                | .07                |                  | Coaly Mudstone         | as above, highly broken, calcite on fracture surfaces                                        |                      |
| 25      |         | 70.32 | 70.40 | .08                | .07                | 70.7             | Coal                   | dull, sheared, calcite on shear surfaces, breaks into plates, few very thin bright stringers |                      |
| 25      |         | 70.40 | 70.72 | .32                | .26                |                  | Coal                   | as above, powders easily                                                                     |                      |
| 25      |         | 70.72 | 71.07 | .35                | .29                |                  | Coal                   | dull banded, mostly powder, sheared                                                          |                      |
|         |         |       |       |                    |                    |                  | Sample                 | <u>ply III</u> , 70.00 - 71.07 meters, 0.88 m true thickness                                 |                      |
|         |         | 71.07 | 71.28 | .21                | .17                |                  | Lost Coal              |                                                                                              |                      |
| 25      |         | 71.28 | 71.40 | .12                | .10                |                  | Coal                   | bright banded, sheared, very broken, quick-seal in coal (loss of circulation)                |                      |
| 25      |         | 71.40 | 71.60 | .10                | .16                |                  | Lost Coal              |                                                                                              |                      |
|         |         |       |       |                    |                    |                  | Sample                 | <u>ply IV</u> 71.07 - 71.60 meters, 0.43 m true thickness                                    |                      |
| 25      |         | 71.60 | 71.79 | .19                | .16                |                  | Coal                   | dull lustrous banded, sheared, breaks into plates                                            |                      |
| 25      |         | 71.79 | 71.81 | .02                | .01                |                  | Ash Band               | soft, off-white, disseminated specks, lens-shaped                                            |                      |
| 25      |         | 71.81 | 72.00 | .19                | .16                |                  | Coal                   | as before                                                                                    |                      |
| 25      |         | 72.00 | 72.04 | .04                | .03                | 72.2             | Coal                   | as before                                                                                    |                      |
| 25      |         | 72.04 | 72.06 | .02                | .02                |                  | Coal                   | bright, crisp, well developed cleat                                                          |                      |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                             | Sample No.     |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------|----------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                             |                |
| 25      |         | 72.06 | 72.15 | .09                 | .07                 |                  | Coal                   | dull lustrous banded, sheared, breaks into plates                                           | VIT 4 ✓        |
| 25      |         | 72.15 | 72.20 | .05                 | .04                 |                  | Coal                   | bright and dull, sheared, powdered base                                                     |                |
| 25      |         | 72.20 | 72.26 | .06                 | .05                 |                  | Coal                   | bright and dull, sheared and polished surfaces, breaks in curved shears, some cleat remains |                |
| 25      |         | 72.26 | 72.31 | .05                 | .04                 |                  | Coal                   | bright, crisp, some shearing                                                                |                |
| 25      |         | 72.31 | 72.43 | .12                 | .10                 |                  | Coal                   | hard, bright, sheared, very good cleat                                                      |                |
| 25      |         | 72.43 | 72.47 | .04                 | .03                 |                  | Coal                   | as above                                                                                    |                |
| 25      |         | 72.47 | 72.85 | .38                 | .31                 |                  | Coal                   | good stick, hard, bright, sometimes granular-looking but is mostly good cleat               |                |
| 25      |         | 72.85 | 72.94 | .09                 | .07                 | 73.2             | Coal                   | as above, very good coal                                                                    |                |
| 26      |         | 72.94 | 73.04 | .10                 | .08                 |                  | Coal                   | as above                                                                                    |                |
| 26      |         | 73.04 | 73.09 | .05                 | .04                 |                  | Coal                   | powdered, mostly bright with some calcite bits                                              |                |
|         |         |       |       |                     |                     |                  | Sample                 | <u>ply V</u> , 71.60 - 73.09 meters, 1.09 m true thickness                                  | Bulk Maceral ✓ |
| 26      |         | 73.09 | 73.22 | .12                 | .11                 |                  | Mudstone Sample        | shot through with calcite veins, polished surfaces, very waxy feel                          |                |
| 26      |         | 73.22 | 73.24 | .02                 | .02                 |                  | Coal Powder            | probably muddy                                                                              |                |
| 26      |         | 73.24 | 73.28 | .04                 | .03                 |                  | Mudstone               | coaly, polished surfaces, silty                                                             |                |



| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                        | Sample No.     |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                        |                |
| 26      |         | 73.28 | 73.53 | .25                | .20                |                  | Mudstone               | highly broken and mixed in with coal powder, some polished surfaces are visible, very carbonaceous                                                                     |                |
|         |         | 73.53 | 73.76 | .23                | .19                |                  | Lost Core              | Mudstone (Coaly)                                                                                                                                                       |                |
| 26      |         | 73.76 | 74.06 | .30                | .25                |                  | Mudstone/Coal          | all powder and tiny pieces, as above                                                                                                                                   |                |
| 26      |         | 74.06 | 74.58 | .52                | .43                |                  | Mudstone               | carbonaceous and coaly, with .5 cm discontinuous bright coal bands, polished surfaces, fairly good core, carbonaceous plant remains, some calcite on polished surfaces |                |
| 26      |         | 74.58 | 74.87 | .29                | .24                | 75.0             | Mudstone               | as above with brightly polished surfaces                                                                                                                               |                |
|         |         |       |       |                    |                    |                  | Sample                 | <u>ply VI</u> 73.09 - 74.87 meters, 1.47 m true thickness                                                                                                              | Bulk ✓         |
| 26      |         | 74.87 | 74.90 | .03                | .01                |                  | Coal                   | bright, crisp, well developed cleat                                                                                                                                    |                |
| 26      | 45°     | 74.90 | 75.15 | .25                | .18                |                  | Coal                   | dull lustrous and bright bands, hard, good stick, heavy                                                                                                                |                |
| 26      |         | 75.15 | 75.18 | .03                | .02                |                  | Coal                   | bright, crumbled                                                                                                                                                       |                |
| 26      |         | 75.18 | 75.22 | .04                | .03                |                  | Coal                   | bright, hard                                                                                                                                                           |                |
| 26      |         | 75.22 | 75.26 | .04                | .03                |                  | Coal                   | bright, powdered                                                                                                                                                       |                |
|         |         | 75.26 | 75.33 | .07                | .05                |                  | Lost Coal              |                                                                                                                                                                        |                |
|         |         |       |       |                    |                    |                  | Sample                 | <u>ply VII</u> 74.87 - 75.33 meters, 0.32 m true thickness                                                                                                             | Bulk Macerol ✓ |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                        | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                        |            |
| 26      |         | 75.33 | 75.67 | .34                 | .24                 |                  | Silty Sandstone         | very fine grained, carbonaceous and coaly plant remains, some calcite on bedding surfaces                                                                                                                                              |            |
| 27      |         | 75.67 | 77.01 | 1.34                | .95                 |                  | Siltstone/<br>Sandstone | interlaminated, soft sediment deformation, calcite veining parallel to bedding, rootlets, coalified plant remains, carbonaceous plant remains, sandstone is very fine grained                                                          |            |
| 27      |         | 77.01 | 77.66 | .65                 | .46                 |                  | Sandstone               | fine grained, silty laminations, polished surfaces, a few rootlets                                                                                                                                                                     |            |
| 27      |         | 77.66 | 77.96 | .30                 | .21                 | 78.0             | Sandstone               | as above                                                                                                                                                                                                                               |            |
| 27      | 55°     | 77.96 | 78.39 | .43                 | .35                 |                  | Sandstone               | fine to upper fine grained, dirty, few silty interlaminations, rootlets                                                                                                                                                                |            |
| 27      |         | 78.39 | 79.29 | .90                 | .71                 |                  | Sandstone               | as above, rare coal stringers, polished surfaces, becoming coarser toward base, rootlets                                                                                                                                               |            |
| 28      | 50°     | 79.29 | 78.39 | .43                 | .35                 |                  | Sandstone               | fine to upper fine grained, dirty, few silty interlaminations, rootlets                                                                                                                                                                |            |
| 28      |         | 78.39 | 79.29 | .90                 | .71                 |                  | Sandstone               | as above, rare coal stringers, polished surfaces, becoming coarser toward base, rootlets                                                                                                                                               |            |
| 28      | 50°     | 79.29 | 80.89 | 1.60                | 1.23                |                  | Sandstone               | medium grained, salt and pepper, polished carbonaceous surfaces, occasional 1 cm thick small pebble bands, numerous coal stringers, rootlets, minor calcite on bedding surfaces, few 3 cm siltstone interbeds, good clean-looking sand |            |
| 28      |         | 80.89 | 80.93 | .04                 | .03                 |                  | Sandstone               | as above                                                                                                                                                                                                                               |            |
| 29      | 57°     | 80.93 | 83.66 | 2.73                | 2.29                |                  | Sandstone               | as above, 1 cm bright coal bands and stringers, calcite-filled fractures, few small mudstone interclasts, quartz crystal on calcite coated fracture, rootlets                                                                          |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                          | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                          |            |
| 30      |         | 83.66 | 83.97 | .31                 | .26                 |                  | Sandstone               | as above, pebble band near top and base (3 cm wide)                                                                                                                                                                                                      |            |
| 30      |         | 83.97 | 84.26 | .29                 | .24                 | 84.3             | Sandstone               | as above, coarsest at base, sharp basal contact                                                                                                                                                                                                          |            |
| 30      | 72°     | 84.26 | 86.46 | 2.20                | 2.09                |                  | Sandstone/<br>Siltstone | fine grained, silty interlaminations, some discontinuous bright coal bands, calcite veining parallel to bedding, soft sediment deformation, rootlets, few coal stringers, dirtier sand than one above, few polished surfaces, carbonaceous plant remains |            |
| 31      |         | 86.46 | 87.06 | .60                 | .57                 |                  | Sandstone/<br>Siltstone | as above                                                                                                                                                                                                                                                 |            |
| 31      |         | 87.06 | 89.16 | 2.10                | 2.00                | 87.3             | Sandstone/<br>Siltstone | as above, with a few 10 cm mudstone interbeds                                                                                                                                                                                                            |            |
| 32      |         | 89.16 | 90.16 | 1.00                | .95                 |                  | Sandstone/<br>Siltstone | as above with intense bioturbation at top                                                                                                                                                                                                                |            |
| 32      | 61°     | 90.16 | 91.76 | 1.60                | 1.40                | 90.5             | Sandstone/<br>Siltstone | as above with 10 cm silty mudstone interbeds, lenticular bedding                                                                                                                                                                                         |            |
| 33      |         | 91.76 | 93.19 | 1.43                | 1.27                |                  | Siltstone/<br>Sandstone | as above, bioturbated at base, few coal stringers (coalified roots)                                                                                                                                                                                      |            |
| 33      | 65°     | 93.19 | 94.45 | 1.26                | 1.14                | 93.1             | Sandstone/<br>Siltstone | as above, bioturbated                                                                                                                                                                                                                                    |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                  | Sample No.     |
|---------|---------|-------|-------|--------------------|--------------------|------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|         |         | From  | To    |                    |                    |                  | MAIN                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                  |                |
| 34      | 63°     | 94.45 | 95.20 | .75                | .67                |                  | Sandstone/<br>Siltstone  | as above, numerous coal stringers at base, abrupt lower contact with mudstone, numerous mudstone interclasts, sandstone coarseness to upper fine grained at base |                |
| 34      |         | 95.20 | 95.75 | .55                | .49                |                  | Mudstone                 | carbonaceous, with coal stringers throughout, calcite veinlets subparallel to bedding, carbonaceous plant remains                                                |                |
|         |         | 95.75 | 95.81 | .06                | .05                |                  | Lost Mudstone            |                                                                                                                                                                  |                |
| 34      |         | 95.81 | 96.00 | .19                | .17                |                  | Coal                     | dull banded, sheared, muddy at top                                                                                                                               |                |
|         |         |       |       |                    |                    |                  | Sample                   | <u>ply VIII</u> , 95.81 - 96.00 meters, 0.17 m true thickness                                                                                                    | Bulk Macerol ✓ |
| 34      |         | 96.00 | 96.10 | .10                | .09                |                  | Carbonaceous<br>Mudstone | polished surfaces, calcite vein sub-parallel to bedding, carbonaceous plant remains, some shearing                                                               |                |
| 34      |         | 96.10 | 96.20 | .10                | .09                |                  | Siltstone                | muddy, carbonaceous plant remains                                                                                                                                |                |
| 34      |         | 96.20 | 96.22 | .02                | .02                | 96.6             | Coal                     | dull Banded, highly broken, muddy                                                                                                                                |                |
| 34      |         | 96.22 | 96.31 | .09                | .08                |                  | Ash Band                 | polished surfaces, soft interbedded with mudstone                                                                                                                | Kilby          |
| 34      |         | 96.31 | 96.72 | .41                | .37                |                  | Siltstone                | sandy, polished surfaces (calcite), coal stringers                                                                                                               |                |
|         |         |       |       |                    |                    |                  | Sample                   | <u>ply IX</u> , 96.00 - 96.72 meters, 0.65 m true thickness                                                                                                      | Bulk ✓         |
| 34      |         | 96.72 | 96.86 | .14                | .12                |                  | Coal                     | bright banded, woody, broken at top                                                                                                                              |                |
| 35      |         | 96.86 | 97.03 | .17                | .15                |                  | Coal                     | as above, good cleat                                                                                                                                             |                |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                            | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)            |            |
| 35      |         | 97.03 - 97.07 |    | .04                 | .04                 |                  | Ash Band 3             | light gray, soft                                           | Kilby      |
|         |         | 97.07 - 97.14 |    | .07                 | .06                 |                  | Lost Core              | (ash or mudstone)                                          |            |
| 35      |         | 97.14 - 97.25 |    | .11                 | .10                 |                  | Coal                   | bright banded, polished surfaces                           | Kilby      |
|         |         | 97.25 - 97.27 |    | .02                 | .02                 |                  | Lost Coal              |                                                            |            |
| 35      |         | 97.27 - 97.29 |    | .02                 | .02                 |                  | Ash Band 4             | as before                                                  | Kilby      |
|         |         | 97.29 - 97.36 |    | .07                 | .06                 |                  | Lost Coaly Mudstone    |                                                            |            |
| 35      |         | 97.36 - 97.42 |    | .06                 | .05                 |                  | Coal                   | powdered and broken, dull banded                           | Kilby      |
|         |         | 97.42 - 97.46 |    | .04                 | .03                 |                  | Lost Coal              |                                                            |            |
| 35      |         | 97.46 - 97.55 |    | .09                 | .08                 |                  | Lost Mudstone          | (coaly)                                                    |            |
| 35      |         | 97.55 - 97.63 |    | .08                 | .07                 |                  | Ash band 5             | as before with coal stringers                              | Kilby      |
|         |         |               |    |                     |                     |                  | Sample                 | <u>ply X</u> , 96.72 - 97.63 meters, 0.80 m true thickness |            |
| 35      |         | 97.63 - 97.71 |    | .08                 | .07                 |                  | Coal                   | dull banded, sheared, highly broken                        | Kilby      |
|         |         | 97.71 - 98.36 |    | .65                 | .58                 |                  | Lost Coal              |                                                            |            |
| 35      |         | 98.36 - 98.55 |    | .19                 | .17                 | 98.1             | Coal                   | bright, woody, sheared                                     |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                       | Sample No.     |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------|----------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                       |                |
| 35      |         | 98.55  | 98.66  | .11                 | .10                 |                  | Coal                   | Powdered, bright                                                      |                |
| 35      |         | 98.66  | 98.70  | .04                 | .04                 |                  | Coal                   | Bright, good cleat                                                    |                |
| 35      |         | 98.70  | 98.73  | .03                 | .03                 |                  | Coal                   | Bright, powdered                                                      |                |
| 35      |         | 98.73  | 99.08  | .35                 | .31                 |                  | Coal                   | Dull lusterous banded, sheared, powdered in places                    |                |
| 35      |         | 99.08  | 99.34  | .26                 | .23                 |                  | Coal<br>Sample         | Dull banded, hard, muddy at base<br><u>ply XI 97.3</u> - 99.34 meters | Bulk Macerdl ✓ |
| 35      |         | 99.34  | 99.39  | .05                 | .04                 |                  | Ash Band 6             | as before                                                             | Kilby          |
| 35      |         | 99.39  | 99.99  | .60                 | .53                 |                  | mudstone               | Coaly and carbonaceous with bright coal bands                         |                |
| 35      |         | 99.99  | 100.12 | .13                 | .12                 |                  | Boney Coal             | Hard with bright bands                                                |                |
| 35      |         | 100.12 | 100.22 | .10                 | .09                 |                  | Coal                   | bright, sheared, crisp                                                |                |
| 35      |         | 100.22 | 100.30 | .08                 | .07                 |                  | Coal                   | bright banded, powdered at base                                       |                |
| 36      |         | 100.30 | 100.48 | .18                 | .16                 |                  | Ash Band 6             | as before, 2 cm of carbonaceous mudstone at either end                | Kilby          |
| 36      |         | 100.48 | 100.58 | .10                 | .09                 |                  | Coal Mudstone          | carbonaceous plant remains                                            |                |
| 36      |         | 100.58 | 100.60 | .02                 | .02                 |                  | Coal<br>Sample         | bright, powder<br><u>ply XII 99.34</u> - 100.60 meters                | Bulk Macerdl ✓ |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                               | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)               |            |
| 36      |         | 100.60 | 100.81 | .21                | .19                |                  | Mudstone               | carbonaceous and coaly                                        |            |
| 36      |         | 100.81 | 100.88 | .07                | .06                |                  | Coaly Mudstone         | with numerous bright, cleated coal bands, hard                |            |
| 36      |         | 100.88 | 101.00 | .12                | .11                |                  | Coal                   | dull lustrous and bright, hard, muddy clasts                  |            |
| 36      |         | 101.00 | 101.06 | .06                | .05                |                  | Coaly Mudstone         | with bright coal bands, sheared                               |            |
| 36      |         | 101.06 | 101.09 | .03                | .03                |                  | Coal                   | bright, powder                                                |            |
| 36      |         | 101.09 | 101.35 | .26                | .23                |                  | Coaly Mudstone         | as before                                                     |            |
| 36      |         | 101.35 | 101.37 | .02                | .02                |                  | Coal                   | dull banded, sheared                                          |            |
| 36      |         | 101.37 | 101.49 | .12                | .11                |                  | Carbonaceous Mudstone  | numerous carbonaceous plant remains, bright coal bands (thin) |            |
| 36      |         | 101.49 | 101.60 | .11                | .10                |                  | Carbonaceous Mudstone  | very coaly, as above                                          |            |
| 36      |         | 101.60 | 101.65 | .05                | .04                |                  | Coal                   | bright and dull, powder                                       |            |
|         |         | 101.65 | 101.66 | .01                | .01                |                  | Lost Coal              |                                                               |            |
| 36      |         | 101.66 | 101.71 | .05                | .04                |                  | Coal                   | dull with some bright bits, powder                            |            |
|         |         | 101.71 | 101.73 | .02                | .02                |                  | Lost Core              | (Mudstone)                                                    |            |
| 36      |         | 101.73 | 101.90 | .17                | .15                |                  | Silty Mudstone         | almost sandy in places, few bright coal stringers, hard       |            |
|         |         |        |        |                    |                    |                  | Sample                 | <u>ply XIII</u> 100.60 - 101.90 meters                        |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                             | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                             |            |
| 36      |         | 101.90 | 102.19 | .29                 | .26                 |                  | Coal                   | dull banded, highly broken and powdered                                     |            |
| 37      |         | 102.19 | 102.84 | .65                 | .58                 | 102.7            | Coal                   | dull lustrous and bright, hard, good core, broken at top, polished surfaces |            |
| 37      |         | 102.84 | 102.96 | .12                 | .11                 |                  | Coal                   | as above                                                                    |            |
| 37      |         | 102.96 | 103.41 | .45                 | .40                 |                  | Coal                   | as above, highly powdered and broken                                        |            |
|         |         | 103.41 | 103.76 | .35                 | .31                 |                  | Lost Coal              |                                                                             |            |
| 37      |         | 103.76 | 103.84 | .08                 | .07                 | 104.3            | Coal                   | bright and dull lustrous, highly broken                                     |            |
|         |         | 103.84 | 104.05 | .21                 | .19                 |                  | Lost Coal              |                                                                             |            |
| 37      |         | 104.05 | 104.13 | .08                 | .07                 |                  | Coal                   | bright, crisp, broken                                                       | VIT 5 ✓    |
|         |         | 104.13 | 104.33 | .20                 | .18                 |                  | Lost coal              |                                                                             |            |
| 37      |         | 104.33 | 104.36 | .03                 | .03                 |                  | Coal                   | bright and dull lustrous, highly broken                                     |            |
|         |         | 104.36 | 104.57 | .21                 | .19                 |                  | Lost Coal              |                                                                             |            |
|         |         |        |        |                     |                     |                  | Sample                 | <u>ply XIV</u> 101.90 - 104.57 meters                                       | Bulk ✓     |
| 37      |         | 104.57 | 104.69 | .12                 | .11                 |                  | Coaly Mudstone         | calcite on polished surfaces, bright coal bands, hard                       |            |
| 37      |         | 104.69 | 104.73 | .04                 | .04                 |                  | Coaly Mudstone         | as above, powdered                                                          |            |
|         |         |        |        |                     |                     |                  | Sample                 | <u>ply XV</u> 104.57 - 104.73 meters                                        | Bulk ✓     |



| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                              | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                              |            |
| 37      |         | 104.73 | 104.77 | .04                 | .04                 |                  | Mudstone               | carbonaceous, polished surfaces, coal stringers                                                                                                                                                                              |            |
| 37      |         | 104.77 | 104.81 | .04                 | .04                 |                  | Ash Band 7             | as before with muddy looking stringers                                                                                                                                                                                       | Kilby      |
| 37      |         | 104.81 | 104.88 | .07                 | .06                 |                  | Mudstone               | as before                                                                                                                                                                                                                    |            |
| 37      |         | 104.88 | 104.91 | .03                 | .03                 |                  | Ash Band 8             | as before                                                                                                                                                                                                                    | Kilby      |
| 37      |         | 104.91 | 104.93 | .02                 | .02                 |                  | Mudstone               | as before                                                                                                                                                                                                                    |            |
| 37      |         | 104.93 | 105.11 | .18                 | .16                 |                  | Mudstone               | slightly silty, bright coal stringers, polished surfaces                                                                                                                                                                     |            |
| 37      |         | 105.11 | 105.12 | .01                 | .01                 |                  | Ash Band 9             | as before                                                                                                                                                                                                                    | Kilby      |
| 37      |         | 105.12 | 105.23 | .11                 | .10                 |                  | Mudstone               | carbonaceous, coal bands, polished surfaces, calcite on fractures                                                                                                                                                            |            |
| 37      |         | 105.23 | 105.90 | .67                 | .60                 | 105.5            | Mudstone               | as above, some silty areas, large calcite coated joint perpendicular to bedding                                                                                                                                              |            |
| 37      |         | 105.90 | 106.13 | .23                 | .11                 |                  | Sandstone              | upper fine grained, soft-sediment deformation, siltstone globule in middle, rip-up clasts, flame structures, bedding is unrecognizable, rare coal stringers                                                                  |            |
| 38      | 28°     | 106.13 | 108.53 | 2.40                | 1.3                 |                  | Sandstone              | as above, faintly laminated at top, bioturbated at base with 10-20 cm siltstone interbeds, numerous rip-up siltstone clasts, coal stringers, calcite-lined joints, large uneven fractures, polished surfaces, broken at base |            |
| 38      |         |        |        |                     |                     | 108.7            |                        |                                                                                                                                                                                                                              |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                        | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                        |            |
| 39      |         | 108.53 | 110.91 | 2.38                | 1.12                |                  | Sandstone               | As above, channel-fill deposit, wispy carbonaceous laminae, coal stringers and discontinuous bands are abundant, medium to coarse grained in places, mudstone rip-up clasts, polished surfaces, no silty bands, large coalified roots, broken along coaly and carbonaceous stringers, broken at base, calcite veining along fractures. |            |
| 39      |         | 110.91 | 111.14 | .23                 | .11                 | 110.9            | Sandstone               | as above, very coarse                                                                                                                                                                                                                                                                                                                  |            |
| 40      |         | 111.14 | 111.88 | .74                 | .35                 |                  | Sandstone               | as above, very coarse, gritty and conglomeratic in places                                                                                                                                                                                                                                                                              |            |
| 40      |         | 111.88 | 113.74 | 1.86                | .87                 | 111.9            | Sandstone               | as above, conglomeratic at top, broken                                                                                                                                                                                                                                                                                                 |            |
| 41      |         | 113.74 | 114.24 | .50                 | .17                 |                  | Sandstone               | as above, broken at base                                                                                                                                                                                                                                                                                                               |            |
| 41      | 20°     | 114.24 | 115.61 | 1.37                | .47                 | 114.3            | Sandstone               | as above, occasional 5 cm. mudstone interbeds, numerous mudstone rip-up clasts                                                                                                                                                                                                                                                         |            |
| 41      |         | 115.61 | 116.14 | .53                 | .18                 | 115.5            | Sandstone               | as above                                                                                                                                                                                                                                                                                                                               |            |
| 42      |         | 116.14 | 116.52 | .38                 | .13                 |                  | Sandstone               | as above, highly broken at base                                                                                                                                                                                                                                                                                                        |            |
|         |         | 116.52 | 116.71 | .17                 | .06                 |                  | LOST SANDSTONE          |                                                                                                                                                                                                                                                                                                                                        |            |
| 42      |         | 116.71 | 117.05 | .34                 | .12                 | 116.7            | Sandstone               | as above abrupt lower contact                                                                                                                                                                                                                                                                                                          |            |
| 42      | 57°     | 117.05 | 117.78 | .73                 | .61                 |                  | Siltstone/<br>Sandstone | interbedded, sandstone is fine grained, faintly laminated. 3 cm. medium grained sandstone band in middle, calcite-filled fractures, highly broken at base, rare coal stringers, some polished carbonaceous surfaces                                                                                                                    |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                |            |
| 70      |         | 193.84 | 194.33 | .49                 | .21                 | 194.8            | Mudstone               | as above, very slightly silty in middle of unit                | VIT 10 ✓   |
| 70      |         | 194.33 | 194.58 | .25                 | .11                 |                  | Mudstone               | as above, non-silty, numerous bright coal bonds, highly broken |            |
|         |         | 194.58 | 194.63 | .05                 | .02                 |                  | LOST MUDSTOND          |                                                                |            |
| 70      |         | 194.63 | 194.66 | .03                 | .03                 |                  | Coal                   | dull banded, sheared, powdered                                 |            |
| 70      |         | 194.66 | 195.78 | 1.12                | .47                 |                  | Mudstone               | as before, slightly silty, highly broken at base               |            |
|         |         | 195.78 | 195.94 | .16                 | .07                 |                  | LOST MUDSTONE          |                                                                |            |
| 70      |         | 195.94 | 196.26 | .32                 | .14                 | 196.9            | Mudstone               | as above, numerous polished surfaces and coal stringers        |            |
| 71      |         | 196.26 | 196.52 | .26                 | .11                 |                  | Mudstone               | as above, highly broken, calcite coated pieces                 |            |
| 71      |         | 196.52 | 198.57 | 2.05                | .87                 | 197.5            | Mudstone               | carbonaceous plant remains, coal stringers, polished surfaces  |            |
|         |         | 198.57 | 199.32 | .75                 | .32                 |                  | LOST MUDSTONE          |                                                                |            |
| 71      |         | 199.32 | 199.57 | .25                 | .11                 | 200.3            | Mudstone               | as above, calcite on polished surfaces                         |            |
|         |         | 199.57 | 199.82 | .25                 | .11                 |                  | LOST MUDSTONE          |                                                                |            |
| 72      | 20°     | 199.82 | 200.57 | .75                 | .26                 |                  | Mudstone               | as above                                                       |            |
|         |         |        |        |                     |                     | 201.8            |                        | END OF HOLE                                                    |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION       |                                                                                                                                                                                                                                       | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                         | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                       |            |
| 45      | 63°     | 125.10-126.43 |    | 1.33               | 1.19               |                  | Siltstone/Mudstone/Sandstone | interlaminated and interbedded, soft-sediment deformation on rootlets, sandstone is very fine grained, few wispy calcite veinlets parallel to bedding, rare coal stringers, sometimes faintly laminated, mostly mottled, worm burrows |            |
| 45      |         | 126.43-126.85 |    | .42                | .37                | 127.1            | Sandstone/Siltstone/Mudstone | as above, broken at base                                                                                                                                                                                                              |            |
| 46      |         | 126.85-129.58 |    | 1.73               | 1.43               |                  | Sandstone/Siltstone/Mudstone | as above, calcite vein perpendicular to bedding at top, bioturbated, rootlets, rare carbonaceous plant remains                                                                                                                        |            |
| 46      |         |               |    |                    |                    | 130.1            |                              |                                                                                                                                                                                                                                       |            |
| 47      | 40°     | 129.58-132.32 |    | 2.74               | 1.76               |                  | Sandstone/Siltstone/Mudstone | as above, cross-laminated                                                                                                                                                                                                             |            |
| 48      |         | 132.32-132.59 |    | .27                | .17                |                  | Sandstone/Siltstone/Mudstone | as above                                                                                                                                                                                                                              |            |
| 48      | 56°     | 132.59-135.09 |    | 2.50               | 2.07               | 133.2            | Sandstone/Siltstone/Mudstone | as above, bioturbated                                                                                                                                                                                                                 |            |
| 49      |         | 135.09-135.75 |    | .66                | .55                |                  | Sandstone/Siltstone/Mudstone | as above, sand-filled worm burrows, disturbed bedding                                                                                                                                                                                 |            |
| 49      | 18°     | 135.75-137.50 |    | 1.75               | .54                | 136.2            | Sandstone/Siltstone/Mudstone | as above, calcite veining, parallel to bedding, bedding steepens in this unit, large vertical worm burrow, crosslaminated, abrupt lower contact, flame structures                                                                     |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                             | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                             |            |
| 49      |         | 137.50 | 137.92 | .42                 | .13                 |                  | Siltstone/<br>Mudstone | with occasional very fine grained sandstone interbeds and interlamina-<br>tions, becoming much more muddy (fining)          |            |
| 50      |         | 137.92 | 138.67 | .75                 | .23                 |                  | Siltstone/<br>Mudstone | as above, numerous rootlets, wispy calcite veining parallel to bedding                                                      |            |
| 50      | 9°      | 138.67 | 140.82 | 2.15                | .34                 | 139.3            | Mudstone/<br>Siltstone | as above, but with much more mudstone                                                                                       |            |
| 51      |         | 140.82 | 141.48 | .66                 | .10                 |                  | Mudstone/<br>Siltstone | as above, polished surfaces (bedding)                                                                                       |            |
| 51      |         | 141.48 | 141.76 | .28                 | .04                 |                  | Mudstone               | Occasionally silty, coal stringers, wispy calcite stringers, carbonaceous and<br>coaly plant remains, near vertical bedding |            |
| 51      |         | 141.76 | 143.05 | 1.29                | .20                 | 142.3            | Mudstone               | as above                                                                                                                    |            |
| 51      |         | 143.05 | 143.07 | .01                 | .02                 |                  | Coal                   | bright band within the mudstone                                                                                             | VIT 7 ✓    |
| 51      |         | 143.07 | 143.24 | .17                 | .03                 |                  | Mudstone               | as before                                                                                                                   |            |
| 51      |         | 143.24 | 143.27 | .03                 | .03                 |                  | Coal                   | bright band                                                                                                                 |            |
| 51      |         | 143.27 | 143.55 | .28                 | .04                 |                  | Mudstone               | as before                                                                                                                   |            |
| 52      | 24°     | 143.55 | 144.88 | 1.33                | .54                 |                  | Mudstone/<br>Siltstone | interlaminated, convolute bedding, bioturbated, numerous coaly and calcite-<br>lined rootlets                               |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                                                                                                    | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                     | Amplified<br>(Include Coal Recovery for Each Seam)                                                                                                                                                                                                 |            |
| 52      | 10°     | 144.88 | 146.28 | 1.40                | .02                 | 145.4            | Mudstone/<br>Siltstone   | as above                                                                                                                                                                                                                                           |            |
| 53      | 1°      | 146.28 | 147.93 | 1.65                | .03                 |                  | Mudstone/<br>Siltstone   | as above                                                                                                                                                                                                                                           |            |
| 52      |         | 147.93 | 149.15 | 1.22                | .02                 | 148.4            | Mudstone/<br>Siltstone   | as above                                                                                                                                                                                                                                           |            |
| 53      | 1°      | 149.15 | 151.00 | 1.85                | .03                 |                  | Mudstone/<br>Siltstone   | as above                                                                                                                                                                                                                                           |            |
| 53      |         | 151.00 | 152.04 | 1.04                | .02                 | 151.5            | Mudstone/<br>Siltstone   | as above                                                                                                                                                                                                                                           |            |
| 54      | 37°     | 152.04 | 154.14 | 2.10                | 1.26                |                  | Mudstone/<br>Siltstone   | mudstone is quite carbonaceous in middle, fine grained laminated sandstone band (30 cm.) at base, bioturbated, cross laminated, wispy calcite veining parallel to bedding at base, numerous coaly rootlets, carbonaceous plant remains in mudstone |            |
| 54      |         | 154.14 | 154.88 | .74                 | .45                 | 154.5            | Mudstone/<br>Siltstone   | as above, no sandy layers                                                                                                                                                                                                                          |            |
| 56      |         | 154.88 | 155.43 | .55                 | .33                 |                  | Mudstone                 | polished carbonaceous surfaces, coal stringers, numerous carbonaceous and coaly plant remains                                                                                                                                                      |            |
| 56      |         | 155.43 | 155.66 | .23                 | .13                 |                  | Carbonaceous<br>Mudstone | with numerous coal stringers, broken at top, polished surfaces                                                                                                                                                                                     |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION            |                                                                                                 | Sample No.     |
|---------|---------|---------------|----|---------------------|---------------------|------------------|-----------------------------------|-------------------------------------------------------------------------------------------------|----------------|
|         |         | From          | To |                     |                     |                  | MAIN                              | Amplified (Include Coal Recovery for Each Seam)                                                 |                |
| 56      | 8°      | 155.66-156.06 |    | .40                 | .24                 |                  | LOST COAL                         |                                                                                                 | Bulk Maceral ✓ |
|         |         | 156.06-156.16 |    | .10                 | .06                 |                  | Carbonaceous Mudstone             |                                                                                                 |                |
|         |         | 156.16-156.55 |    | .39                 | .23                 |                  | Lost Core - carbonaceous mudstone |                                                                                                 |                |
|         |         | 156.55-157.00 |    | .45                 | .27                 |                  | Coal/Coaly Mudstone               | highly broken and powdered, coal looks dull with a few bright band, probable core loss          |                |
| 56      | 8°      | 157.00-158.31 |    | 1.31                | .18                 | 157.6            | Mudstone/Siltstone                | Sample*<br>ply XVII 155.43 - 157.00 meters<br>numerous bright coal bands, faintly laminated     |                |
| 57      |         | 158.31-158.36 |    | .05                 | .01                 |                  | Coaly Mudstone                    | highly broken                                                                                   |                |
|         |         | 158.36-158.48 |    | .12                 | .02                 |                  | LOST COALY MUDSTONE               |                                                                                                 |                |
|         |         | 158.48-158.58 |    | .10                 | .01                 |                  | LOST MUDSTONE                     |                                                                                                 |                |
| 57      |         | 158.58-158.88 |    | .30                 | .04                 |                  | Mudstone                          | highly broken, waxy feel, light grey color, polished surface, calcite coated fractures          |                |
| 57      |         | 158.88-159.30 |    | .42                 | .06                 |                  | Coal                              | dull lustrous banded, highly broken and powdered throughout                                     | VIT 8 ✓        |
|         |         | 159.30-160.10 |    | .80                 | .11                 |                  | LOST COAL<br>Sample               | (within upper unit)<br>ply XIX 158.88 - 160.10 meters                                           | Bulk Maceral ✓ |
| 57      |         | 160.10-161.52 |    | 1.42                | .20                 | 160.0            | Coal<br>Sample                    | broken at top, fairly good stick at base, dull lustrous banded<br>ply XX 160.10 - 161.52 meters | Bulk Maceral ✓ |

\*Note: No Ply XVI \*  
Ply XVIII

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION       |                                                                                                                                                                        | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                         | Amplified (Include Coal Recovery for Each Seam)                                                                                                                        |            |
| 57      |         | 161.52 | 161.71 | .19                | .03                | 161.8            | Sandstone/Siltstone/Mudstone | sandstone is very fine grained, faintly laminated in places, rootlets, few bright coal stringers, coaly plant remains                                                  |            |
| 58      | 16°     | 161.71 | 163.56 | 1.85               | .51                |                  | Sandstone/Siltstone/Mudstone | sandstone is very fine grained, faintly laminated in places, rootlets, few bright coal stringers, coaly plant remains                                                  |            |
| 58      |         | 163.56 | 164.41 | .85                | .23                | 163.7            | Sandstone/Siltstone/Mudstone | as above, with 80% sand                                                                                                                                                |            |
| 59      | 21°     | 164.41 | 166.70 | 2.29               | .82                |                  | Sandstone/Siltstone          | as above, minor mudstone interbeds, bioturbated, calcite vein parallel to bedding, rootlets, worm burrows, flame structures, disturbed laminations, mottled appearance |            |
| 59      |         | 166.70 | 167.10 | .40                | .14                | 166.7            | Mudstone/Siltstone/Sandstone | as before mudstone is 50%, disturbed laminations, near vertical beds at base, few coal stringers, rootlets, worm burrows                                               |            |
| 60      |         | 167.10 | 169.79 | 2.69               | .96                |                  | Mudstone/Siltstone/Sandstone | as above, sandier at base                                                                                                                                              |            |
| 60      |         |        |        |                    |                    | 169.8            |                              |                                                                                                                                                                        |            |
| 61      |         | 169.79 | 170.17 | .38                | .14                |                  | Sandstone                    | fine grained, laminated with silt, crow-laminated, disturbed bedding                                                                                                   |            |
| 61      |         | 170.17 | 171.88 | 1.71               | .61                |                  | Mudstone                     | dark grey, few 3 cm. sandy bands at top, grades to sandstone at base, coal stringers, calcite veining parallel to bedding, carbonaceous plant fragments                |            |
| 61      | 15°     | 171.88 | 172.57 | .69                | .18                |                  | Sandstone                    | very fine to fine grained, with siltstone interlaminations, highly rooted, highly disturbed bedding                                                                    |            |
| 62      |         | 172.57 | 172.86 | .29                | .08                |                  | Sandstone                    | as above                                                                                                                                                               |            |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                |            |
| 62      |         | 172.86 | 173.63 | .77                | .20                | 172.8            | Sandstone               | as above, grading to siltstone at base, coal stringers, wispy calcite veins parallel to bedding                                                                                |            |
| 62      |         | 173.63 | 175.29 | 1.66               | .43                |                  | Mudstone                | silty, with up to 10 cm. very fine grained sandstone interbeds, coal stringers, rootlets, 2 cm. coal band near base, calcite-filled fractures, rare carbonaceous plant remains |            |
| 63      |         | 175.29 | 175.98 | .69                | .18                |                  | Siltstone               | argillaceous, rootlets, coal stringers, bioturbated (mottled)                                                                                                                  |            |
| 63      |         | 175.98 | 178.13 | 2.15               | .56                | 175.9            | Mudstone                | silty, polished surfaces, coal stringers, calcite-filled fractures (rare), carbonaceous plant remains, indistinct bedding                                                      |            |
| 64      |         | 178.13 | 178.94 | .81                | .21                |                  | Mudstone                | non-silty, coal stringers, polished surfaces, carbonaceous plant remains                                                                                                       |            |
| 64      |         | 178.94 | 180.19 | 1.25               | .32                | 178.9            | Mudstone                | as above, becoming silty towards base                                                                                                                                          |            |
| 64      | 34°     | 180.19 | 180.92 | .73                | .41                |                  | Siltstone/<br>Sandstone | interlaminated, sandstone is very fine grained, rootlets, bioturbated at base, worm burrows, rare carbonaceous plant remains                                                   |            |
| 65      |         | 180.92 | 181.24 | .32                | .18                |                  | Mudstone                | silty at top, carbonaceous with coal stringers at base                                                                                                                         |            |
| 65      |         | 181.24 | 181.26 | .02                | .02                |                  | Coal                    | bright, powdered                                                                                                                                                               | VIT 9 ✓    |
| 65      |         | 181.26 | 181.57 | .31                | .17                |                  | Coaly Mudstone          | highly broken and powdered                                                                                                                                                     |            |
| 65      |         | 181.57 | 183.64 | 2.07               | 1.16               |                  | Mudstone                | carbonaceous with numerous coal stringers, polished surfaces, broken near top                                                                                                  |            |
| 66      |         | 183.64 | 184.82 | 1.18               | .66                |                  | Mudstone                | as above, rare silty areas, broken in middle                                                                                                                                   |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                  | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                  |            |
| 66      |         | 184.82 | 186.19 | 1.37               | .77                | 184.7            | Mudstone               | as above, non-silty                                                                                                              |            |
| 67      |         | 186.19 | 187.78 | 1.59               | .89                |                  | Mudstone               | as above, very coaly at base                                                                                                     |            |
| 67      |         | 187.78 | 188.58 | .80                | .45                | 187.8            | Mudstone               | as above, very coaly at top, coaly and powdered at base, numerous polished surfaces, net-like calcite veinlets in center of unit |            |
| 68      |         | 188.58 | 189.00 | .42                | .23                |                  | Mudstone               | as above                                                                                                                         |            |
| 68      |         | 189.00 | 190.16 | 1.16               | .65                | 189.8            | Mudstone               | as above, numerous polished surfaces                                                                                             |            |
| 68      | 25°     | 190.16 | 191.17 | 1.01               | .43                | 191.1            | Mudstone               | as above                                                                                                                         |            |
| 69      |         | 191.17 | 192.13 | .96                | .41                |                  | Mudstone               | as above, abundant polished surfaces, broken at base                                                                             |            |
| 69      |         | 192.13 | 192.21 | .08                | .03                |                  | Coaly Mudstone         | powdered and broken                                                                                                              |            |
|         |         | 192.21 | 192.26 | .05                | .02                |                  | LOST COALY MUDSTONE    |                                                                                                                                  |            |
| 69      |         | 192.26 | 192.56 | .30                | .13                |                  | Mudstone               | as before, highly broken                                                                                                         |            |
| 69      |         | 192.56 | 193.76 | 1.20               | .51                | 193.5            | Mudstone               | as above, abundant polished surfaces and coal stringers                                                                          |            |
| 70      |         | 193.76 | 193.84 | .08                | .03                |                  | Mudstone               | as above                                                                                                                         |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                |            |
| 70      |         | 193.84 | 194.33 | .49                 | .21                 | 194.8            | Mudstone               | as above, very slightly silty in middle of unit                | VIT 10 ✓   |
| 70      |         | 194.33 | 194.58 | .25                 | .11                 |                  | Mudstone               | as above, non-silty, numerous bright coal bonds, highly broken |            |
|         |         | 194.58 | 194.63 | .05                 | .02                 |                  | LOST MUDSTOND          |                                                                |            |
| 70      |         | 194.63 | 194.66 | .03                 | .03                 |                  | Coal                   | dull banded, sheared, powdered                                 |            |
| 70      |         | 194.66 | 195.78 | 1.12                | .47                 |                  | Mudstone               | as before, slightly silty, highly broken at base               |            |
|         |         | 195.78 | 195.94 | .16                 | .07                 |                  | LOST MUDSTONE          |                                                                |            |
| 70      |         | 195.94 | 196.26 | .32                 | .14                 | 196.9            | Mudstone               | as above, numerous polished surfaces and coal stringers        |            |
| 71      |         | 196.26 | 196.52 | .26                 | .11                 |                  | Mudstone               | as above, highly broken, calcite coated pieces                 |            |
| 71      |         | 196.52 | 198.57 | 2.05                | .87                 | 197.5            | Mudstone               | carbonaceous plant remains, coal stringers, polished surfaces  |            |
|         |         | 198.57 | 199.32 | .75                 | .32                 |                  | LOST MUDSTONE          |                                                                |            |
| 71      |         | 199.32 | 199.57 | .25                 | .11                 | 200.3            | Mudstone               | as above, calcite on polished surfaces                         |            |
|         |         | 199.57 | 199.82 | .25                 | .11                 |                  | LOST MUDSTONE          |                                                                |            |
| 72      | 20°     | 199.82 | 200.57 | .75                 | .26                 |                  | Mudstone               | as above                                                       |            |
|         |         |        |        |                     |                     | 201.8            |                        | END OF HOLE                                                    |            |

ESSO RESOURCES CANADA LIMITED - COAL DIVISION  
CORE & COAL CORE DESCRIPTION

|          |               |
|----------|---------------|
| Project  | FALLING CREEK |
| Map Area | 930,93P       |

|       |          |
|-------|----------|
| Begin | 07/08/83 |
| End   | 07/11/83 |

|                  |         |
|------------------|---------|
| Core Examiner(s) | S. Carr |
|------------------|---------|

|          |       |
|----------|-------|
| Hole No. | 83-19 |
|----------|-------|

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of 48

Hole Particulars

|             |                             |              |     |
|-------------|-----------------------------|--------------|-----|
| Location    | 149,110 North<br>57175 East |              |     |
| Elevation   | 1292 m                      |              |     |
| Total Depth | 251.66 m                    | Hole Bearing | -   |
|             |                             | Hole Angle   | 90° |

Coal Coring Performance

|                |        |
|----------------|--------|
| Core Diameter  | HQ     |
| Core Recovered | 211.62 |
| Length Cored   | 249.06 |
| Core Recovery  | 85%    |

Logging

|           |          |
|-----------|----------|
| Logged By | BPB      |
|           | Neutron  |
|           | CCS      |
|           | Dipmeter |
|           | BRD/LSD  |

|                  |                            |
|------------------|----------------------------|
| Examination Date | July 13 -<br>July 22, 1983 |
|------------------|----------------------------|

| Box No. | BCA (°) | Depth |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                 | Sample No. |
|---------|---------|-------|----|--------------------|--------------------|------------------|------------------------|-------------------------------------------------|------------|
|         |         | From  | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam) |            |
|         |         |       |    |                    |                    |                  |                        |                                                 |            |

| Box No. | BCA (°)  | Depth |      | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sample No. |
|---------|----------|-------|------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To   |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 1       | 71<br>67 | 2.60  | 5.13 | 2.53                |                     | 3.04             | TRICONED Sandstone     | TO 3.04 m zeroed at drill platform = 2.60 m zeroed at ground level (10 feet casing).<br>medium grey, argillaceous, very fine grained to upper fine grained, thin mudstone interbeds and mudstone interlaminations in upper half of unit, laminated throughout, some cross - laminations and small ripples, some burrows and roots, some carbonaceous plant fragments, iron staining on joint planes sub-parallel to core axis (upper point bar) |            |
| 2       |          | 5.13  | 5.37 | .24                 |                     |                  | Lost Core Sandstone    | as above                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| 2       |          | 5.37  | 5.76 | .39                 |                     | 6.10             | Sandstone              | as above, thin siltstone and mudstone interbeds in upper half of unit, there is a 45 cm thick, dirty, medium fine grained sandstone with mudstone intraclasts and coalified woody pieces 10 cm from base of unit (base of small channel).                                                                                                                                                                                                       |            |
| 2       |          | 5.76  | 7.66 | 1.90                |                     | 8.23             | Sandstone/Mudstone     | as above, thin siltstone and mudstone interbeds in upper half of unit, there is a 45 cm thick, dirty, medium fine grained sandstone with mudstone intraclasts and coalified woody pieces 10 cm from base of unit (base of small channel).<br>medium grey, very fine grained to upper fine grained, thinly interbedded, argillaceous sandstone, sandstone and mudstone are moderately churned.                                                   |            |
| 3       |          | 7.66  | 7.85 | .19                 |                     |                  | Sandstone/Mudstone     | as above, abundant burrows at base, abundant polished carbonaceous surfaces and associated pyrite mineralization near base of unit.                                                                                                                                                                                                                                                                                                             |            |
| 3       |          | 7.85  | 8.55 | .70                 |                     |                  | Sandstone/Mudstone     | as above, abundant burrows at base, abundant polished carbonaceous surfaces and associated pyrite mineralization near base of unit.                                                                                                                                                                                                                                                                                                             |            |
| 3       |          | 8.55  | 8.96 | .41                 |                     |                  | Sandstone              | upper fine grained, medium light grey, dirty, poorly sorted, mudstone pebble intraclasts, numerous coalified wood fragments, carbonaceous interlaminations, sharp lower contact (small channel).                                                                                                                                                                                                                                                |            |

| Box No. | BCA (°)  | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                          | Sample No.  |
|---------|----------|-------|-------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|         |          | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                          |             |
| 3       | 78       | 8.96  | 10.50 | 1.54                |                     |                  | Mudstone               | medium dark grey with sandstone/siltstone interbeds in middle of unit, silty in places, rare carbonaceous plant fragments except for the occasional thin band which contains abundant coaly and carbonaceous plant fragments, silty at base                                                                              | 1/4<br>WARD |
| 4       | 81       | 10.50 | 10.78 | .28                 |                     |                  | Sandstone              | thin siltstone interbeds, sandstone is very fine grained, medium grey and laminated, moderately churned, burrowed and bioturbated, occasional coaly plant fragments                                                                                                                                                      |             |
| 4       | 76       | 10.78 | 11.26 | .48                 | 11.3                |                  | Sandstone              | as above, gradational basal contact                                                                                                                                                                                                                                                                                      |             |
| 4       | 65<br>68 | 11.26 | 13.08 | 1.82                |                     |                  | Siltstone              | upper 2/3 of unit has thin dark grey mudstone interbeds throughout, occasional very thin sandstone interbeds, mottled, churned and bioturbated, calcite wisps throughout, carbonaceous plant remains throughout polished surfaces sub-parallel to bedding at base, 1 1/2 cm thick ash band 19 cm from base (Ash Band #1) |             |
| 5       |          | 13.08 | 13.58 | .50                 |                     |                  | Siltstone              | as above, mudstone interbeds in bottom 20 cm, broken at base, occasional coaly wisps.                                                                                                                                                                                                                                    |             |
| 5       | 70       | 13.58 | 15.65 | 2.07                | 14.3                |                  | Siltstone              | as above, muddier at top, sandier at base, occasional calcate wisps, coalified plant fragments, pyrite often associated with coaly material, occasional polished surfaces.                                                                                                                                               |             |
| 6       |          | 15.65 | 16.57 | .92                 |                     |                  | Siltstone              | as above, abundant carbonaceous plant fragments in mudstone interbeds.                                                                                                                                                                                                                                                   |             |
| 6       |          | 16.57 | 18.31 | 1.74                | 17.4                |                  | Mudstone               | Siltstone beds in top 40 cm, abundant coaly and carbonaceous plant fragments, some silty interbeds throughout.                                                                                                                                                                                                           |             |

| Box No. | BCA (°)  | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                        | Sample No. |
|---------|----------|-------------|----|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From        | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                        |            |
| 7       |          | 18.31-18.72 |    | .41                |                    |                  | Mudstone               | as above, highly broken                                                                                                                                                                                                                                                                                                                                                |            |
| 7       | 84<br>80 | 18.72-20.75 |    | 2.03               |                    | 19.5             | Siltstone              | medium grey with very thin sandstone interbeds and interlaminations, occasional very thin mudstone interbeds, mottled and churned in places, sandstone is laminated, abundant carbonaceous plant fragments.                                                                                                                                                            |            |
| 8       | 72<br>63 | 20.75-22.66 |    | 1.91               |                    | 21.3             | Sandstone              | medium light grey, very fine grained to upper fine grained, argillaceous, mudstone interlaminations, carbonaceous laminations, sandstone gets slightly coarser and dirtier downwards, small mudstone intraclasts in bottom half of unit, broken at base, abundant coaly stringers at base, concretions near top, abundant carbonaceous plant remains (channel facies). |            |
| 8       | 65<br>65 | 22.66-23.27 |    | .61                |                    | 23.5             | Sandstone              | as above, very coaly and carbonaceous, very broken at top, 4 cm bright coal band 40 cm from top of unit, polished surfaces, medium dark grey, occasional mudstone intraclasts (channel facies).                                                                                                                                                                        |            |
| 9       | 67       | 23.27-23.56 |    | .29                |                    |                  | Sandstone              | as above, very coaly and carbonaceous, abundant coaly stringers and mudstone intraclasts. (channel facies)                                                                                                                                                                                                                                                             |            |
| 9       |          | 23.56-24.77 |    | 1.21               |                    |                  | Mudstone               | 6 cm thick coal 4 cm from base, medium dark grey, generally carbonaceous with occasional thin coaly mudstone interbeds, 15 cm thick siltstone, interbed near top and in middle of unit, coaly stringers throughout.                                                                                                                                                    |            |

| Box No. | BCA (°)  | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                            | Sample No. |
|---------|----------|-------|-------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                            |            |
| 9       |          | 24.77 | 25.82 | 1.05               |                    |                  | Siltstone              | grades downward to sandstone, mottled and churned, coaly stringers, medium grey carbonaceous plant fragments.                                                                                                                                                                                                                              |            |
| 9       | 45       | 25.82 | 26.19 | .37                |                    | 26.5             | Sandstone              | very fine grained, medium grey, laminated at top, mudstone interlamination, mottled and churned in bottom half, polished large carbonaceous plant fragment and abundant small carbonaceous plant fragments.                                                                                                                                |            |
| 10      |          | 26.19 | 26.63 | .44                |                    |                  | Sandstone              | as above, wispy calcite throughout bottom 10 cm                                                                                                                                                                                                                                                                                            |            |
| 10      | 70<br>72 | 26.63 | 28.66 | 2.03               |                    |                  | Siltstone              | Interbedded mudstone and siltstone at top grading down to interbedded siltstone and sandstone at base, carbonaceous plant fragments throughout, mottled and churned throughout, occasional calcite wisps throughout, some coaly wisps and coaly stringers throughout, root structures, mudstone interbeds are sometimes very carbonaceous. |            |
| 10      |          | 28.66 | 28.84 | .18                |                    | 29.6             | Mudstone               | dark grey, coal stringers, polished surfaces                                                                                                                                                                                                                                                                                               |            |
| 11      |          | 28.84 | 30.08 | 1.24               |                    |                  | Mudstone               | dark grey, rare plant fragments, blocky fracture                                                                                                                                                                                                                                                                                           |            |
| 11      |          | 30.08 | 30.28 | .20                | .18                |                  | Coal                   | bright banded, good stick care, sheared and broken at top                                                                                                                                                                                                                                                                                  |            |
| 11      |          | 30.28 | 30.59 | .31                | .29                |                  | Coal                   | dull banded, dull coal has pearly sheen, good stick core, sheared at base                                                                                                                                                                                                                                                                  |            |



| Box No. | BCA (°) | Depth       |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                     | Sample No. |
|---------|---------|-------------|----|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------|------------|
|         |         | From        | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                     |            |
| 11      |         | 30.59-30.62 |    | .03                 | .03                 | 32.0             | Coal                   | bright banded, fusain wisps, highly ground and broken                                               | Bulk Mac ✓ |
|         |         | 30.62-30.82 |    | .20                 | .18                 |                  | Lost Coal              |                                                                                                     |            |
|         |         |             |    |                     |                     |                  | SAMPLE                 | <u>Seam one ply I</u> , 30.08-30.82 coal interval, 0.67 m true thickness                            |            |
| 11      |         | 30.82-30.91 |    | .09                 | .08                 |                  | Lost Core              |                                                                                                     | Vit 1 ✓    |
| 11      |         | 30.91-30.94 |    | .03                 | .03                 |                  | Mudstone               | medium dark gray, calcite wisps, carbonaceous plant fragments                                       |            |
| 11      |         | 30.94-31.00 |    | .06                 | .06                 |                  | Coaly Mudstone         | highly sheared, pearly sheen                                                                        |            |
| 11      |         | 31.00-31.06 |    | .06                 | .06                 |                  | Coal                   | dull, sheared, hard, some bright bands                                                              | 1/4 WARD   |
| 11      |         | 31.06-31.40 |    | .34                 | .32                 |                  | Lost Coal              |                                                                                                     |            |
| 11      |         | 31.40-31.53 |    | .13                 | .12                 |                  | Coal                   | bright, crisp                                                                                       |            |
| 11      |         | 31.53-31.60 |    | .07                 | .07                 |                  | Coal                   | bright, banded                                                                                      | 1/4 WARD   |
| 11      |         | 31.60-31.64 |    | .04                 | .04                 |                  | Coaly Mudstone         | with thin dull bands and one thick bright band                                                      |            |
| 11      |         | 31.64-31.67 |    | .03                 | .03                 |                  | ASH BAND #2            | carbonaceous and muddy                                                                              |            |
|         |         | 31.67-31.72 |    | .05                 | .05                 |                  | Lost Core              |                                                                                                     | 1/4 WARD   |
| 11      |         | 31.72-31.75 |    | .03                 | .03                 |                  | Coal                   | dull                                                                                                |            |
| 12      |         | 31.75-31.85 |    | .10                 | .09                 | 32.6             | Coal                   | dull with some thin bright bands, broken                                                            | Bulk Mac ✓ |
|         |         | 31.85-32.00 |    | .15                 | .14                 |                  | Lost Coal              |                                                                                                     |            |
|         |         |             |    |                     |                     |                  | SAMPLE                 | <u>Seam One Ply II</u> , 30.82-32.00 interval of coal and thin partings, 1.11 meters true thickness |            |

| Box No. | BCA (°)   | Depth       |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                 | Sample No. |
|---------|-----------|-------------|----|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |           | From        | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                 |            |
| 12      | 60°<br>58 | 32.00-33.93 |    | 1.93                |                     |                  | Mudstone               | medium dark grey, carbonaceous and occasional coaly plant fragments throughout, polished surfaces throughout, carbonaceous and coaly bands in upper half, silty bands in lower half, lower half is moderately broken, coal stringers throughout |            |
|         |           | 33.93-34.36 |    | .43                 |                     |                  | Lost Core              |                                                                                                                                                                                                                                                 |            |
| 12      |           | 34.36-34.58 |    | .22                 |                     | 35.1             | Mudstone               | as above, silty, calcite wisps                                                                                                                                                                                                                  |            |
| 13      |           | 34.58-37.19 |    | 2.61                |                     |                  | Siltstone/<br>Mudstone | very thinly interbedded, coal stringers throughout, calcite wisps in lower half, polished carbonaceous surfaces, some thin laminated sandstone interbeds, roots, bioturbated, carbonaceous in places, siltier and sandier towards base.         |            |
| 14      |           | 37.19-37.32 |    | .13                 |                     |                  | Siltstone/<br>Mudstone | as above.                                                                                                                                                                                                                                       |            |
| 14      |           | 37.32-37.61 |    | .29                 |                     | 38.1             | Siltstone              | muddy, highly churned and mottled and bioturbated, coal stringers, calcite wisps.                                                                                                                                                               |            |
| 14      |           | 37.61-38.00 |    | .39                 |                     |                  | Mudstone               | highly broken at base, medium dark grey, coaly plant remains, coaly towards base.                                                                                                                                                               |            |
| 14      |           | 38.00-38.10 |    | .10                 | .92                 |                  | Coal                   | dull, pearly sheen, some thin bright bands                                                                                                                                                                                                      |            |
| 14      |           | 38.10-38.11 |    | .01                 | .01                 | 38.7             | Coal                   | dull, pearly sheen, highly broken                                                                                                                                                                                                               |            |
|         |           | 38.11-38.16 |    | .05                 | .05                 |                  | Lost Coal              |                                                                                                                                                                                                                                                 |            |

| Box No. | BCA (°) | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                    |                                                                                                                                     | Sample No.    |
|---------|---------|-------------|----|--------------------|--------------------|------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------|
|         |         | From        | To |                    |                    |                  | MAIN                                      | Amplified (Include Coal Recovery for Each Seam)                                                                                     |               |
| 14      |         | 38.16-38.36 |    | .20                | .18                |                  | Cemented Coal/Coaly Mudstone<br>Lost Core | some bright bands, sheared, hard, frothy texture, brown streak, (grains of brown - possibly siderite + calcite cement, ? - pyrite). |               |
|         |         | 38.36-38.50 |    | .14                | .13                |                  |                                           |                                                                                                                                     |               |
| 14      |         | 38.50-38.58 |    | .08                | .07                | 39.3             | Cemented Coal/Coaly Mudstone              | broken into small pieces, frothy texture, as above with some pieces of dull coal                                                    |               |
|         |         | 38.58-38.76 |    | .18                | .17                |                  | Lost Coal                                 |                                                                                                                                     |               |
|         |         | 38.76-38.84 |    | .08                | .07                |                  | Lost Calcite/Coal                         |                                                                                                                                     |               |
|         |         |             |    |                    |                    |                  | SAMPLE                                    | Seam 2, Ply I 38.00-38.84 interval of coal and "funny" coal, 0.77 m true                                                            | BULK<br>MAC ✓ |
| 14      |         | 38.84-38.89 |    | .05                | .05                |                  | Coaly Mudstone/<br>Cemented Coal          | hard, frothy texture, sheared, some thin bright coal bands                                                                          |               |
| 14      |         | 38.89-39.00 |    | .11                | .10                |                  | Calcite/Coal                              | calcite cement + veins throughout, coaly and carbonaceous, very hard (funny coal), frothy texture                                   |               |
| 14      |         | 39.00-39.13 |    | .13                | .12                | 39.6             | Coal                                      | dull banded, good stick core, ground at top                                                                                         |               |
| 14      |         | 39.13-39.21 |    | .08                | .07                |                  | Coal                                      | dull, sheared, good stick core                                                                                                      |               |
| 14      |         | 39.21-39.33 |    | .12                | .11                |                  | Coal                                      | dull banded, sheared, pearly sheen                                                                                                  |               |
| 14      |         | 39.33-39.36 |    | .03                | .03                |                  | Coal                                      | dull banded                                                                                                                         | Vit 2 ✓       |
| 14      |         | 39.36-39.46 |    | .10                | .09                |                  | Coal                                      | dull banded, sheared                                                                                                                |               |
| 14      |         | 39.46-39.56 |    | .10                | .09                |                  | Coal                                      | dull, sheared, polished surfaces                                                                                                    |               |

| Box No. | BCA (°)  | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                   |                                                                                                                                                                                                                                                               | Sample No. |
|---------|----------|-------------|----|--------------------|--------------------|------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From        | To |                    |                    |                  | MAIN                                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                               |            |
| 14      |          | 39.56-39.69 |    | .13                |                    | 40.2             | SAMPLE                                   | Seam 2, Ply II, 38.84-39.56, .88 m true thickness                                                                                                                                                                                                             | BULK MAC ✓ |
|         |          | 39.69-39.72 |    | .03                |                    |                  | Mudstone/<br>Coaly Mudstone<br>Lost Core |                                                                                                                                                                                                                                                               |            |
| 14      |          | 39.72-39.79 |    | .07                |                    |                  | Mudstone                                 | polished surfaces, carbonaceous plant fragments                                                                                                                                                                                                               |            |
| 15      |          | 39.79-40.72 |    | .93                |                    |                  | Mudstone                                 | medium dark grey, coaly and carbonaceous plant fragments, carbonaceous in places, silty in places, top half is broken, zone of abundant calcite wisps in middle, some calcite veins & slickensides at high angle to core axis, churned and mottled in places. |            |
| 15      |          | 40.72-42.19 |    | 1.47               |                    | 41.8             | Mudstone                                 | as above, some calcite wisps in center, occasional coal stringers                                                                                                                                                                                             |            |
| 16      | 55<br>64 | 42.19-43.13 |    | .94                |                    |                  | Mudstone                                 | silty in places, good stick core, mottled, grades downward to siltstone with sandstone interlamination at base, carbonaceous plant fragments throughout, roots at base.                                                                                       |            |
| 16      |          | 43.13-44.56 |    | 1.43               |                    | 44.8             | Mudstone                                 | as above, top 44 cm is a siltstone (with sandstone interlamination) grading down to mudstone, very broken at base, bottom 18 cm is sandy and highly bioturbated.                                                                                              |            |
| 16      |          | 44.56-44.62 |    | .06                | .06                |                  | Coal                                     | dull lustrous, sheared                                                                                                                                                                                                                                        |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                            |                                                                                                                                                                                  | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                                                              | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                  |            |
| 16      |         | 44.62 | 44.70 | .08                | .07                |                  | Coal                                                              | powder, dull with bright (?)                                                                                                                                                     |            |
| 17      |         | 44.70 | 44.75 | .05                | .05                |                  | Coal                                                              | powder, dull (?)                                                                                                                                                                 | BULK MAC ✓ |
|         |         | 44.75 | 45.10 | .35                | .32                |                  | Lost Coal                                                         |                                                                                                                                                                                  |            |
|         |         | 45.10 | 45.49 | .39                | .36                |                  | Lost Core                                                         |                                                                                                                                                                                  |            |
|         |         | 45.49 | 45.91 | .46                | .43                |                  | Lost Coal                                                         |                                                                                                                                                                                  |            |
|         |         | 45.91 | 46.09 | .18                | .17                |                  | SAMPLE<br>Lost Coal/<br>Calcite Parting                           | <u>Seam 3, Ply I</u> , 44.56-45.91 meters, 0.32 m true thickness                                                                                                                 |            |
| 17      |         | 46.09 | 46.33 | .24                | .22                | 46.6             | Coal/Calcite                                                      | completely sheared and calcite cemented, "mirror" polished surfaces, grey "calcite breccia" appearance on outside of core corresponds to zero gamma parting on geophysical logs. | BULK MAC ✓ |
|         |         |       |       |                    |                    | SAMPLE           | <u>Seam 3, Ply II</u> , 45.91-46.33 meters, 0.39 m true thickness |                                                                                                                                                                                  |            |
| 17      |         | 46.33 | 46.38 | .05                | .05                |                  | Coal                                                              | mudstone lenses, dull, broken                                                                                                                                                    |            |
| 17      |         | 46.38 | 46.40 | .02                | .02                |                  | Coal                                                              | powder and small pieces, dull and bright (?)                                                                                                                                     |            |
| 17      |         | 46.40 | 46.48 | .08                | .07                |                  | Coal                                                              | dull banded, highly polished surfaces, sheared                                                                                                                                   |            |
| 17      |         | 46.48 | 46.64 | .16                | .15                |                  | Coal                                                              | dull banded, broken, sheared, pearly sheen and lustrous surfaces                                                                                                                 |            |
| 17      |         | 46.64 | 46.68 | .04                | .04                |                  | Lost Coal                                                         |                                                                                                                                                                                  | VIT 3 ✓    |
|         |         | 46.68 | 46.76 | .08                | .07                |                  | Coal                                                              | dull and bright, extremely broken                                                                                                                                                |            |
| 17      |         | 46.76 | 46.80 | .04                | .04                |                  | Lost Coal                                                         |                                                                                                                                                                                  |            |
| 17      |         | 46.80 | 46.85 | .05                | .05                |                  | Coal                                                              | bright banded, sheared                                                                                                                                                           |            |
|         |         | 46.85 | 46.94 | .09                | .08                |                  | Coal                                                              | dull and bright, extremely broken, sheared                                                                                                                                       |            |
|         |         |       |       |                    |                    |                  | SAMPLE                                                            | <u>Seam 3, Ply III</u> , 46.33-46.94 meters, 0.57 meters true thickness                                                                                                          | ✓          |

| Box No. | BCA (°) | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                                                                                       |                                                                 | Sample No. |
|---------|---------|-------------|----|--------------------|--------------------|------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------|
|         |         | From        | To |                    |                    |                  | MAIN                                                                                                                         | Amplified (Include Coal Recovery for Each Seam)                 |            |
| 17      |         | 46.94-47.02 |    | .08                |                    | 47.8             | Lost Core                                                                                                                    |                                                                 |            |
|         |         | 47.02-47.08 |    | .06                |                    |                  | Mudstone                                                                                                                     | sheared, polished surfaces                                      |            |
|         |         | 47.08-47.38 |    | .30                |                    |                  | <i>Lost core</i>                                                                                                             |                                                                 |            |
| 17      |         | 47.38-47.44 |    | .06                |                    |                  | Coal                                                                                                                         | dull, lustrous and polished due to shearing                     |            |
| 17      |         | 47.44-44.52 |    | .08                |                    |                  | Mudstone                                                                                                                     | carbonaceous, polished surfaces                                 |            |
| 17      |         | 47.52-47.66 |    | .14                |                    |                  | Coaly/Mudstone                                                                                                               | highly broken, highly polished, bright coal bands               |            |
| 17      |         | 47.66-47.83 |    | .17                |                    |                  | Coaly/Mudstone                                                                                                               | extremely broken and powdered                                   |            |
| 17      |         | 47.83-47.88 |    | .05                |                    |                  | Mudstone/<br>Coal Powder                                                                                                     | coaly, powdered, black                                          |            |
|         |         | 47.88-48.00 |    | .12                |                    |                  | Lost Coal                                                                                                                    |                                                                 |            |
|         |         |             |    |                    |                    |                  | SAMPLE                                                                                                                       | Seam 3, Ply IV, 46.94-48.00 meters. 0.98 meters true thickness. |            |
| 17      |         | 48.00-48.05 |    | .05                |                    | Mudstone         | medium grey, carbonaceous, highly broken.                                                                                    | BULK<br>MAC ✓                                                   |            |
|         |         | 48.05-48.58 |    | .53                |                    | Lost Core        |                                                                                                                              |                                                                 |            |
| 17      |         | 48.58-49.03 |    | .45                | 49.1               | Mudstone         | carbonaceous plant fragments, medium dark grey, numerous highly polished (calcite lined) surfaces at low angle to core axis. |                                                                 |            |

| Box No. | BCA (°)  | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                                               | Sample No. |
|---------|----------|-------------|----|--------------------|--------------------|------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From        | To |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                               |            |
| 18      | 20       | 49.03-50.28 |    | 1.25               |                    |                  | Mudstone                | medium dark grey, completely sheared and polished, calcite wisps and stringers, broken, many polished surfaces are nearly vertical (possible fault zone) carbonaceous.                                                                                                                                                                                        |            |
|         |          | 50.28-50.63 |    | .35                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                                                                                                                               |            |
| 18      |          | 50.63-52.01 |    | 1.38               |                    | 50.9             | Mudstone                | medium dark grey, polished surfaces and calcite wisps, coal stringers carbonaceous                                                                                                                                                                                                                                                                            |            |
| 19      |          | 52.01-52.70 |    | .69                |                    |                  | Mudstone                | medium dark grey, carbonaceous, coal stringers, coaly in middle, abundant carbonaceous plant fragments.                                                                                                                                                                                                                                                       |            |
| 19      | 60<br>62 | 52.70-53.44 |    | .74                |                    |                  | Siltstone               | with very thin mudstone interbeds throughout and sandstone interbeds in bottom half, churned and bioturbated, burrows, coal stringers near top, calcite wisps throughout, abundant coaly and carbonaceous plant fragments, 5 cm thick calcite cemented zone with brecciation, concretions and possibly siderite cement. (? displacement - zone of fracturing) |            |
| 19      |          | 53.44-54.78 |    | 1.34               |                    | 53.9             | Siltstone               | as above with root structures grading downwards to a slightly carbonaceous mudstone with siltstone interlaminations in lower half of unit, sandy at base.                                                                                                                                                                                                     |            |
| 20      | 58       | 54.78-56.25 |    | 1.47               |                    |                  | Siltstone/<br>Sandstone | mudstone with siltstone interbeds at top grades downward through siltstone into medium grey, very fine grained sandstone, churned, bioturbated, laminated in bottom half, calcite wisps associated with coal stringers in mudstone at top of unit, some root structures.                                                                                      |            |
| 20      |          | 56.25-57.40 |    | 1.15               |                    | 56.9             | Siltstone               | sandstone interbeds and interlaminations throughout top half, bottom half contains mudstone interbeds up to 15 cm thick, generally mottled and bioturbated, occasional calcite wisps, calcite lined joint plane at low angle to core axis, some coaly and carbonaceous plant fragments.                                                                       |            |

| Box No. | BCA (°)        | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|----------------|-------|-------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                         |            |
| 21      | 62<br>62       | 57.40 | 59.11 | 1.71               |                    |                  | Sandstone              | medium light grey, up to upper fine grained, laminated, very thin mudstone and siltstone interlaminaions, abundant root structures, some horizons are churned and bioturbated, some horizons have cross laminations and ripples, a 2-3 cm thick coal band in center (coalified wood fragment), some carbonaceous inter-laminations, some root structures are coalified. |            |
| 21      | 64<br>70<br>68 | 59.11 | 60.07 | .96                |                    | 60.0             | Sandstone              | as above, some calcite wisps                                                                                                                                                                                                                                                                                                                                            |            |
| 22      | 60<br>62       | 60.07 | 62.13 | 2.06               |                    |                  | Siltstone              | silty mudstone and sandstone interbeds throughout range from 2 cm - 15 cm thick, laminations, root structures, some bioturbated horizons, some zones contain abundant calcite wisps, a few coal stringers, coaly plant fragments.                                                                                                                                       |            |
| 22      | 58<br>62       | 62.13 | 62.61 | .48                |                    | 63.1             | Siltstone              | as above                                                                                                                                                                                                                                                                                                                                                                |            |
| 23      | 50             | 62.61 | 63.34 | .73                |                    |                  | Siltstone              | as above, gradational to mudstone below (Boxes 18 to 23 are typical overbank facies)                                                                                                                                                                                                                                                                                    |            |
| 23      |                | 63.34 | 64.54 | 1.20               |                    |                  | Mudstone               | medium dark grey, coaly plant fragments, some polished surfaces, silty in places, crackly fracture, sharp lower contact.                                                                                                                                                                                                                                                |            |
| 23      |                | 64.54 | 64.64 | .10                | .09                |                  | Coal                   | dull, muddy at top, lustrous, sheared                                                                                                                                                                                                                                                                                                                                   |            |
| 23      |                | 64.64 | 64.70 | .06                | .05                |                  | Coal                   | dull, lustrous                                                                                                                                                                                                                                                                                                                                                          |            |
| 23      |                | 64.70 | 64.73 | .03                | .03                |                  | Coal                   | dull banded                                                                                                                                                                                                                                                                                                                                                             |            |



| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                 | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam) |            |
| 23      |         | 64.73 | 64.75 | .02                | .02                |                  | Coal                   | dull, sheared, highly broken                    | VIT 4 ✓    |
| 23      |         | 64.75 | 64.80 | .05                | .05                |                  | Coal                   | dull, sheared, some bright bands                |            |
| 23      |         | 64.80 | 64.84 | .04                | .04                |                  | Coal                   | dull banded, polished surfaces                  |            |
| 23      |         | 64.84 | 64.89 | .05                | .05                |                  | Coal                   | dull, good stick core                           |            |
| 23      |         | 64.89 | 64.98 | .09                | .08                |                  | Coal                   | dull banded, good stick core                    |            |
| 23      |         | 64.98 | 65.01 | .03                | .03                |                  | Coal                   | dull, broken                                    |            |
| 23      |         | 65.01 | 65.13 | .12                | .11                |                  | Coal                   | dull banded/dull, good stick core               |            |
| 24      |         | 65.13 | 65.57 | .44                | .39                | 66.1             | Lost Coal              |                                                 |            |
|         |         | 65.57 | 65.59 | .02                | .02                |                  | Coal                   | dull, broken                                    |            |
| 24      |         | 65.59 | 65.62 | .03                | .03                |                  | Coal                   | dull and bright                                 |            |
| 24      |         | 65.62 | 65.67 | .05                | .05                |                  | Coal                   | dull banded                                     |            |

| Box No. | BCA (°)   | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                         | Sample No. |
|---------|-----------|-------|-------|--------------------|--------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |           | From  | To    |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                         |            |
| 24      |           | 65.67 | 65.72 | .05                | .05                |                  | Coal                    | dull                                                                                                                                                                                                                                                                    | BULK MAC ✓ |
| 24      |           | 65.72 | 65.80 | .08                | .07                |                  | Coal SAMPLE             | dull, with some bright bands, sharp lower contact <u>Seam 4</u> , 64.54-65.80 meters, 1.12 m true thickness                                                                                                                                                             |            |
| 24      |           | 65.80 | 65.85 | .05                |                    |                  | Mudstone                | coaly                                                                                                                                                                                                                                                                   |            |
| 24      |           | 65.85 | 65.96 | .11                |                    |                  | Mudstone                | coal stringers, broken at base, polished surfaces                                                                                                                                                                                                                       |            |
| 24      |           | 65.96 | 65.97 | .01                |                    |                  | Coal                    | powder                                                                                                                                                                                                                                                                  |            |
| 24      |           | 65.97 | 66.09 | .12                |                    |                  | Lost core               | mudstone                                                                                                                                                                                                                                                                |            |
| 24      | 51        | 66.09 | 66.67 | .58                |                    |                  | Siltstone               | muddy, mottled, churned, coaly plant fragments near top, carbonaceous plant fragments, polished surfaces, broken at base.                                                                                                                                               |            |
|         |           | 66.67 | 66.97 | .12                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                                         |            |
| 24      |           | 66.79 | 68.20 | 1.41               |                    | 67.5             | Siltstone/<br>Mudstone  | interbeds vary from 2 cm to 15 cm thick, some sandy laminations, root structures, broturbated zones, coaly and carbonaceous plant fragments.                                                                                                                            |            |
| 25      |           | 68.20 | 68.52 | .32                |                    |                  | Mudstone/<br>Siltstone  | as above, mudstone predominates, churned and bioturbated                                                                                                                                                                                                                |            |
| 25      | 77°<br>75 | 68.52 | 69.18 | .66                |                    | 69.2             | Sandstone/<br>Siltstone | thinly interbedded with 15 cm mudstone at top, root structures, churned and bioturbated zones, laminated near base, gradational lower contact, polished carbonaceous surfaces, carbonaceous plant fragments, zones of parallel calcite veining and wisps (tension gash) |            |
| 25      |           | 69.18 | 70.04 | .86                |                    |                  | Mudstone                | silty interlaminations in the top half, bioturbated, rare carbonaceous plant fragments in top 3/4 of unit, abundant plant remains and carbonaceous in lower 1/4.                                                                                                        |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                      | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                      |            |
| 25      |         | 70.04 | 70.18 | .14                 | .12                 |                  | Stoney Coal            | heavy, hard, cleat, pearly sheen, mudstone lenses, thin bright coal wisps, brown streak, rare coaly plant fragments. |            |
| 25      |         | 70.18 | 70.25 | .07                 | .06                 |                  | Coal                   | dull with mudstone lenses and some bright bands, hard, sheared, good stick core                                      |            |
|         |         | 70.25 | 70.62 | .37                 | .33                 |                  | Lost Coal              |                                                                                                                      |            |
|         |         | 70.62 | 71.08 | .46                 | .41                 |                  | Lost Core              | (first parting)                                                                                                      |            |
| 25      |         | 71.08 | 71.13 | .05                 | .04                 |                  | Coal                   | dull banded, good stick core                                                                                         |            |
| 25      |         | 71.13 | 71.25 | .12                 | .11                 |                  | Coal                   | dull with some bright bands, sheared, pearly sheen, good stick core                                                  |            |
| 25      |         | 71.25 | 71.27 | .02                 | .02                 |                  | Coal                   | dull with some bright bands, sheared, pearly sheen, broken                                                           |            |
| 26      |         | 71.27 | 71.33 | .06                 | .05                 |                  | Coal                   | extremely broken and powdered, dull, sheared                                                                         |            |
|         |         | 71.33 | 71.46 | .13                 | .11                 |                  | Lost Coal              |                                                                                                                      |            |
| 26      |         | 71.46 | 71.66 | .20                 | .18                 | 72.2             | Coal                   | dull and bright, slightly sheared, sugary texture due to shear planes oblique to cleat, good stick core.             | VIT 5 ✓    |
|         |         | 71.66 | 71.77 | .11                 | .10                 |                  | Coal                   | dull banded, shear planes oblique to cleat, pearly sheen, good stick core                                            |            |
| 26      |         | 71.77 | 71.90 | .13                 | .11                 |                  | Lost Coal              |                                                                                                                      |            |
| 26      |         | 71.90 | 71.92 | .02                 | .02                 |                  | Coal                   | highly broken, calcite cemented                                                                                      |            |
| 26      |         | 71.92 | 72.03 | .11                 | .10                 |                  | Coal                   | Calcite cemented, very heavy, open fractures, coincides with low gamma kick on geophysical log ("Funny Coal")        | "A"        |

| Box No. | BCA (°) | Depth       |    | App. Thickness (m) | True Thickness (m)                                | Marker Block (m)                                       | LITHOLOGIC DESCRIPTION                                                                                                                                                         |                                                 | Sample No. |
|---------|---------|-------------|----|--------------------|---------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------|
|         |         | From        | To |                    |                                                   |                                                        | MAIN                                                                                                                                                                           | Amplified (Include Coal Recovery for Each Seam) |            |
| 26      | 57      | 72.03-72.06 |    | .03                | .03                                               | 74.7                                                   | Lost Coal                                                                                                                                                                      | (calcite cemented)                              | BULK MAC ✓ |
|         |         | 72.06-72.34 |    | .28                | .25                                               |                                                        | Lost Coal                                                                                                                                                                      |                                                 |            |
|         |         |             |    | SAMPLE             | Seam 5, 70.04-72.34 meters, 2.03 m true thickness |                                                        |                                                                                                                                                                                |                                                 |            |
|         |         | 72.34-72.51 |    | .17                | Mudstone                                          |                                                        | coaly, numerous carbonaceous plant fragments                                                                                                                                   |                                                 |            |
|         |         | 72.51-73.75 |    | 1.24               | Mudstone                                          |                                                        | 15 cm sandy bed at top, highly broken in middle, broken at base, silty in places, abundant coaly and carbonaceous plant fragments, coal stringers, slightly polished surfaces. |                                                 |            |
|         |         | 73.75-73.81 |    | .06                | Lost Core                                         |                                                        |                                                                                                                                                                                |                                                 |            |
|         |         | 73.81-74.02 |    | .21                | Mudstone                                          |                                                        | as above                                                                                                                                                                       |                                                 |            |
|         |         | 74.02-74.04 |    | .02                | Coaly Mudstone                                    |                                                        | brown                                                                                                                                                                          |                                                 |            |
|         |         | 74.04-74.06 |    | .02                | Coal/Mudstone                                     |                                                        | thick bright coal bands with mudstone interlamination, mirror-bright surfaces                                                                                                  |                                                 |            |
|         |         | 74.06-74.24 |    | .18                | Lost Coal                                         |                                                        |                                                                                                                                                                                |                                                 |            |
|         |         | 74.24-74.31 |    | .07                | Coal                                              |                                                        | dull banded, mirror bright polished surfaces, highly broken, some mudstone lenses                                                                                              |                                                 |            |
|         |         | 74.31-74.36 |    | .05                | Lost Coal                                         |                                                        |                                                                                                                                                                                |                                                 |            |
|         |         | 74.36-74.39 |    | .03                | Coal                                              |                                                        | powder, dull and bright (?)                                                                                                                                                    |                                                 |            |
|         |         | 74.39-74.51 |    | .12                | Lost Coal                                         |                                                        |                                                                                                                                                                                |                                                 |            |
|         |         | 74.51-74.58 |    | .07                | Coal                                              | dull, sheared, some bright bands                       |                                                                                                                                                                                |                                                 |            |
|         |         |             |    |                    | SAMPLE                                            | Seam 6, Ply I, 74.02-74.58 meters, 0.46 true thickness |                                                                                                                                                                                |                                                 |            |
|         |         |             |    |                    |                                                   |                                                        |                                                                                                                                                                                | BULK MAC ✓                                      |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                 | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                 |            |
| 27      |         | 74.58 | 74.64 | .06                 | .05                 |                  | Coaly Mudstone         | sheared, some coal lenses                                                                                                                                       |            |
| 27      |         | 74.64 | 74.98 | .34                 | .28                 |                  | Mudstone<br>SAMPLE     | coaly near top, abundant coaly and carbonaceous plant fragments throughout, good stick<br><u>Seam 6, Ply II, 74.58-74.98 meters, 0.33 meters true thickness</u> | BULK MAC ✓ |
| 27      |         | 74.98 | 75.04 | .06                 | .05                 |                  | Coal                   | dull banded, good stick, slightly sheared, discontinuous 1 cm mudstone lens in middle                                                                           | VIT 6 ✓    |
| 27      |         | 75.04 | 75.13 | .09                 | .07                 |                  | Coal                   | dull with some bright bands, lustrous due to shearing, good stick core                                                                                          |            |
| 27      |         | 75.13 | 75.17 | .04                 | .03                 |                  | Coal                   | dull banded, good stick core, lustrous shear surfaces                                                                                                           |            |
| 27      |         | 75.17 | 75.22 | .05                 | .04                 |                  | Coal                   | dull, lustrous due to shearing                                                                                                                                  |            |
| 27      |         | 75.22 | 75.29 | .07                 | .06                 |                  | Coal                   | lustrous due to shearing, dull banded                                                                                                                           |            |
| 27      |         | 75.29 | 75.42 | .13                 | .11                 |                  | Coal<br>SAMPLE         | powder, dull banded?<br><u>Seam 6, Ply III, 74.98-75.42 meters, .36 m true thickness</u>                                                                        | BULK MAC ✓ |
| 27      |         | 75.42 | 76.44 | 1.02                |                     |                  | Lost Coal              |                                                                                                                                                                 |            |
| 27      |         | 76.44 | 76.70 | .26                 |                     | 76.8             | Mudstone               | coaly, highly broken, mirror-bright polished surfaces, calcite lining polished fracture surfaces, carbonaceous plant fragments.                                 |            |

| Box No. | BCA (°)    | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                                        | Sample No. |
|---------|------------|-------|-------|--------------------|--------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From  | To    |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                        |            |
| 27      | 52         | 76.70 | 77.81 | 1.11               |                    |                  | Mudstone                | coal stringers throughout, silty interlamination and interbeds increase downward, sandy at base, mottled and bioturbated throughout, coaly and carbonaceous plant fragments, polished surfaces.                                                                                                                                                        |            |
| 28      | 59°<br>26° | 77.81 | 79.77 | 1.96               |                    | 78.3             | Siltstone/<br>Sandstone | mudstone interlamination and interbeds in top half, some laminated and cross-laminated horizons, some churned and bioturbated horizons, some coal stringers, root structures, polished fracture surfaces, rare carbonaceous plant fragments, BCAs change throughout the unit from 59° to 26° at base, calcite veins in middle are parallel to bedding. |            |
| 28      |            | 79.77 | 80.41 | .64                |                    |                  | Mudstone                | silty at top, medium dark grey, polished surfaces with calcite mineralization                                                                                                                                                                                                                                                                          |            |
| 29      |            | 80.41 | 80.69 | .28                |                    |                  | Mudstone                | as above.                                                                                                                                                                                                                                                                                                                                              |            |
| 29      |            | 80.69 | 82.92 | 2.23               |                    | 81.4             | Mudstone                | occasional silty interbeds throughout, grades downward to 43 cm thick siltstone at base, coal stringers throughout, polished surfaces, broken zone of coal powder 1 meter from base, sheared surface throughout, coaly and carbonaceous plant fragments.                                                                                               |            |
| 30      |            | 82.92 | 83.40 | .48                |                    |                  | Siltstone               | with mudstone interbeds, mottled, churned, bioturbated, root structures, coal stringers, calcite wisps throughout, carbonaceous plant fragments.                                                                                                                                                                                                       |            |
| 30      | 27         | 83.40 | 85.48 | 2.08               |                    | 84.4             | Siltstone               | as above, mudstone interbed at top, 29 cm thick calcite breccia zone 46 cm from top, coaly band 30 cm from top, carbonaceous calcite lined slickensides                                                                                                                                                                                                |            |
|         |            |       |       |                    |                    |                  | Possible fault          | parallel to bedding, sandy in places.                                                                                                                                                                                                                                                                                                                  |            |

| Box No. | BCA (°)  | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                      | Sample No. |
|---------|----------|-------|-------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                      |            |
| 31      |          | 85.48 | 86.27 | .79                 |                     |                  | Siltstone              | as above, sandy in places, muddy at base                                                                                                                                                                                                                                                                                                             |            |
| 31      | 28<br>32 | 86.27 | 88.03 | 1.76                |                     | 87.5             | Siltstone              | as above, calcite veins parallel to bedding in middle and slickensided calcite vein at base                                                                                                                                                                                                                                                          |            |
| 32      | 13       | 88.03 | 89.18 | 1.15                |                     |                  | Sandstone              | light grey, to upper fine grained, argillaceous, highly bioturbated, abundant burrows, laminated zone in middle indicates very steep dip, calcite veins at 45° to core axis, silty at base.                                                                                                                                                          |            |
| 32      |          | 89.18 | 90.64 | 1.46                |                     | 90.5             | Siltstone              | mudstone interbed near top, sandy near top and base, highly churned and bioturbated, lower 75 cm contains calcite veins at 45° to core axis and a zone of calcite breccia with associated parallel vertical calcite filled tension fractures, open fractures (possible displacement), polished carbonaceous surfaces, not possible to determine dip. |            |
| 33      | 41       | 90.64 | 92.19 | 1.55                |                     |                  | Siltstone              | as above, microfaults, calcite veins, calcite wisps, slickensides and polished surfaces throughout, parallel calcite filled tension fractures, open fractures and calcite breccia zone at base (? fault zone).                                                                                                                                       |            |
| 33      |          | 92.19 | 93.27 | 1.08                |                     | 93.6             | Siltstone              | muddy and bioturbated near top, polished carbonaceous surfaces throughout, micro-faults, truncated calcite filled tension fractures, open fractures in middle (? fault zone).                                                                                                                                                                        |            |
| 34      |          | 93.27 | 95.27 | 2.00                |                     |                  | Mudstone               | silty and concretionary throughout, some zones of parallel calcite filled tension fractures, polished carbonaceous fractures.                                                                                                                                                                                                                        |            |
| 34      |          | 95.27 | 95.97 | .70                 |                     | 96.6             | Mudstone               | as above                                                                                                                                                                                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION         |                                                                                                                                        | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                           | Amplified (Include Coal Recovery for Each Seam)                                                                                        |            |
| 35      | 15      | 95.97-98.33   |    | 2.36                |                     |                  | Mudstone                       | medium dark grey, a few thin silty bands, some carbonaceous plant fragments, concretions up to 5 cm in diameter, bottom 5 cm is coaly. |            |
|         |         | 98.33-98.80   |    | .47                 |                     |                  | Lost Core                      |                                                                                                                                        |            |
| 35      |         | 98.80-98.86   |    | .06                 |                     | 99.66            | Coaly Mudstone/<br>Coal        | broken into small hard pieces                                                                                                          |            |
|         |         | 98.86-99.50   |    | .64                 |                     |                  | Lost Core                      |                                                                                                                                        |            |
| 35      |         | 99.50-99.66   |    | .16                 |                     |                  | Mudstone                       | coaly plant fragments throughout                                                                                                       |            |
|         |         | 99.66-99.76   |    | .10                 |                     |                  | Lost Core                      |                                                                                                                                        |            |
| 36      |         | 99.76-100.44  |    | .68                 |                     |                  | Mudstone                       | dark grey, carbonaceous, abundant coal stringers throughout, coaly plant frag-ments throughout, coaly in places.                       |            |
|         |         | 100.44-100.61 |    | .17                 |                     |                  | Lost Core                      |                                                                                                                                        |            |
| 36      |         | 100.61-100.63 |    | .02                 |                     |                  | Coaly Mudstone/<br>Coal Powder | highly broken                                                                                                                          |            |
| 36      |         | 100.63-100.82 |    | .19                 |                     |                  | Mudstone                       | as before, moderately broken, calcite lined slickensides, abundant carbonaceous and some coaly plant fragments.                        |            |
| 36      |         | 100.82-101.32 |    | .50                 |                     |                  | Mudstone                       | as above, good stick core except for bottom 15 cm which is highly broken, coal powder at base.                                         |            |
| 36      | 33      | 101.32-102.24 |    | .92                 |                     | 102.1            | Mudstone                       | as above, polished surfaces throughout, silty in the middle                                                                            |            |



| Box No. | BCA (°) | Depth         |               | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION      |                                                                                                 | Sample No. |
|---------|---------|---------------|---------------|---------------------|---------------------|------------------|-----------------------------|-------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To            |                     |                     |                  | MAIN                        | Amplified (Include Coal Recovery for Each Seam)                                                 |            |
| 37      | 30      | 102.24-102.37 | 102.37-102.39 | .13<br>.02          |                     |                  | Coal<br>Lost Coal           | powder                                                                                          | VIT 7 ✓    |
| 37      |         | 102.39-102.44 |               | .05                 |                     |                  | Coal                        | dull and bright, hard                                                                           |            |
| 37      |         | 102.44-102.48 | 102.48-102.55 | .04<br>.07          |                     |                  | Coal<br>Lost Core           | bright banded, crisp, sharp lower contact                                                       |            |
| 37      | 28      | 102.55-102.62 |               | .07                 |                     |                  | Coaly Mudstone              |                                                                                                 |            |
| 37      |         | 102.62-102.66 |               | .04                 |                     |                  | Coal                        | dull banded                                                                                     |            |
| 37      |         | 102.66-102.79 | 102.79-102.88 | .13<br>.09          |                     |                  | Coal<br>Lost Coal           | dull with bright (bright occurs as wisps rather than bands)                                     |            |
|         |         | 102.88-104.08 |               | 1.20                |                     |                  | Lost Core                   |                                                                                                 |            |
| 37      |         | 104.08-104.13 |               | .05                 |                     |                  | Coaly/Mudstone              | polished coaly surfaces                                                                         |            |
| 37      |         | 104.13-104.15 | 104.15-104.47 | .02<br>.32          |                     |                  | Coal<br>Lost Core           | broken, dull with bright                                                                        |            |
| 37      |         | 104.47-104.55 | 104.55-104.63 | .08<br>.08          |                     |                  | Coaly/Mudstone<br>Lost Core | abundant carbonaceous plant fragments                                                           |            |
| 37      |         | 104.63-104.65 | 104.65-104.88 | .03<br>.23          |                     |                  | Coal<br>Lost Core           | powder, dull with bright                                                                        |            |
| 37      |         | 104.88-104.93 |               | .05                 |                     |                  | Mudstone                    | coaly                                                                                           |            |
| 37      |         | 104.93-105.16 |               | .23                 |                     |                  | Mudstone                    | coaly plant remains, carbonaceous plant fragments, polished surfaces, 2 cm coal powder at base. |            |

| Box No. | BCA (°) | Depth         |               | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION      |                                                                                                                                                                    | Sample No.  |
|---------|---------|---------------|---------------|--------------------|--------------------|------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|         |         | From          | To            |                    |                    |                  | MAIN                        | Amplified (Include Coal Recovery for Each Seam)                                                                                                                    |             |
| 37      | 31      | 105.16-105.47 | 105.47-105.56 | .31<br>.09         |                    |                  | Coaly Mudstone<br>Lost Core |                                                                                                                                                                    |             |
| 38      | 30      | 105.56-106.59 |               | 1.03               |                    |                  | Mudstone                    | coaly, very coaly mudstone interbed 20-40 cm from top, carbonaceous plant fragments, polished surfaces.                                                            |             |
| 38      | 30      | 106.59-107.32 |               | .73                |                    |                  | Mudstone                    | carbonaceous, carbonaceous plant fragments throughout, polished surfaces, silty and mottled at top.                                                                |             |
| 38      |         | 107.32-107.42 | 107.42-107.52 | .10<br>.10         |                    |                  | Coaly/Mudstone<br>Lost Core |                                                                                                                                                                    |             |
|         |         | 107.52-108.03 |               | .51                | .25                |                  | Lost Coal                   |                                                                                                                                                                    |             |
| 38      |         | 108.03-108.14 |               | .11                | .05                |                  | Coal                        | broken into large pieces and ground, some pieces are dull (lustrous due to shearing), some pieces are dull banded, some pieces are dull with thin mudstone lenses. |             |
| 38      |         | 108.14-108.30 |               | .16                | .08                |                  | Coal                        | dull lustrous with some bright bands and wisps, stick core                                                                                                         |             |
| 38      |         | 108.30-108.36 |               | .06                | .03                |                  | Coal                        | dull banded, stick core                                                                                                                                            |             |
| 38      |         | 108.36-108.44 |               | .08                | .04                | 108.8            | Coal                        | dull banded, stick core                                                                                                                                            |             |
| 39      | 30      | 108.44-109.33 |               | .89                | .43                |                  | Coal                        | dull banded, stick core, broken at base                                                                                                                            |             |
| 39      |         | 109.33-109.37 |               | .04                | .02                |                  | Coal                        | bright & dull, perfectly preserved calcite replaced root structure                                                                                                 | BULK<br>MAC |
|         |         |               |               |                    |                    |                  | SAMPLE                      | Seam 7, Ply I, 107.52-109.37 meters, 0.90 m true thickness                                                                                                         |             |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                |                                                                                                                                                                                                                              | Sample No.    |
|---------|---------|---------------|----|--------------------|--------------------|------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|         |         | From          | To |                    |                    |                  | MAIN                                  | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                              |               |
| 39      |         | 109.37-109.51 |    | .14                | .07                |                  | Coal                                  | dull banded, heavy, completely calcite cemented, corresponds to zero gamma parting on geophysical log, on outside of core calcite shows "oolitic" texture, on inside the texture is of a nice cleated coal, good stick core. | "B"           |
| 39      |         | 109.51-109.55 |    | .04                | .02                |                  | Coal                                  | dull banded, sugary texture, good stick core                                                                                                                                                                                 |               |
| 39      |         | 109.55-109.65 |    | .10                | .05                | 110.3            | Coal                                  | dull banded, good stick core                                                                                                                                                                                                 |               |
| 39      |         | 109.65-109.80 |    | .15                | .07                |                  | Coal<br>SAMPLE                        | dull banded, "oolitic" texture calcite cement as before, good stick core.<br><u>Seam 7, Ply 11, 109.37-109.80 meters, 0.21 m true thickness</u>                                                                              | BULK<br>MAC ✓ |
| 39      |         | 109.80-109.90 |    | .10                | .05                |                  | Coal                                  | dull banded, 1 1/2 cm thick bright band, good stick core                                                                                                                                                                     |               |
| 39      |         | 109.90-110.03 |    | .13                | .06                |                  | Coal                                  | powder and small pieces, dull and bright(?), small pieces are crisp                                                                                                                                                          | V11 b ✓       |
|         |         | 110.03-110.35 |    | .32                | .16                |                  | Lost Coal                             |                                                                                                                                                                                                                              |               |
| 39      |         | 110.35-110.53 |    | .18                | .09                |                  | Coal                                  | wet powder, dull with bright(?)                                                                                                                                                                                              |               |
| 39      |         | 110.53-110.58 |    | .05                | .02                |                  | Coaly/mudstone                        | highly broken at base                                                                                                                                                                                                        |               |
|         |         | 110.58-110.79 |    | .21                | .10                |                  | Lost Core                             |                                                                                                                                                                                                                              |               |
| 39      |         | 110.79-110.86 |    | .07                | .03                |                  | Coal/Coal<br>Mudstone                 | powder                                                                                                                                                                                                                       |               |
|         |         | 110.86-110.92 |    | .06                | .03                |                  | Lost Coal/Coaly<br>Mudstone<br>SAMPLE | <u>Seam 7, Ply 111, 109.80-110.92 meters, 0.54 m true thickness</u>                                                                                                                                                          | BULK<br>MAC ✓ |
| 39      |         | 110.92-111.07 |    | .15                |                    |                  | Mudstone                              | carbonaceous plants and plant fragments throughout, coaly wisps                                                                                                                                                              |               |
|         |         | 111.07-111.12 |    | .05                |                    |                  | Lost Core                             |                                                                                                                                                                                                                              |               |

| BOX NO. | DGA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | marker block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                         |            |
| 39      |         | 111.12 | 111.14 | .02                |                    |                  | Coal/Coaly Mudstone    | powder                                                                                                                                                  |            |
| 39      |         | 111.14 | 111.17 | .03                |                    |                  | Coaly Mudstone         |                                                                                                                                                         |            |
| 39      |         | 111.17 | 111.23 | .06                |                    |                  | Coaly Mudstone         |                                                                                                                                                         |            |
| 40      | 28°     | 111.23 | 112.24 | 1.01               |                    | 111.86           | Mudstone               | carbonaceous and coaly, polished surfaces parallel to bedding, some calcite mineralization, abundant coaly and carbonaceous plants and plant fragments. |            |
| 40      |         | 112.24 | 112.66 | .42                |                    |                  | Mudstone               | as above, grading downwards to coaly mudstone                                                                                                           |            |
| 40      |         | 112.66 | 112.78 | .12                | .06                |                  | Coal                   | dull banded, bright 2 cm thick band, moderately broken, slightly sheared                                                                                | VIT 9 ✓    |
| 40      |         | 112.78 | 112.82 | .04                | .02                |                  | Coal                   | dull, ground and broken                                                                                                                                 |            |
| 40      |         | 112.82 | 112.86 | .04                | .02                |                  | Coal                   | dull, some bright bands with good cleat                                                                                                                 |            |
| 40      |         | 112.86 | 112.88 | .02                | .01                |                  | Coal                   | powder and small pieces, dull                                                                                                                           |            |
| 40      |         | 112.88 | 113.51 | .63                | .30                |                  | Coal                   | dull banded, good stick core, bright bands up to 2 cm thick, good cleat, polished fracture surfaces                                                     |            |
| 40      |         | 113.51 | 113.61 | .10                | .05                |                  | Coal                   | dull banded, moderately broken, polished fracture surface at low angle to core axis                                                                     |            |
| 40      |         | 113.61 | 113.86 | .25                | .12                |                  | Coal SAMPLE            | dull banded, good stick core<br>Seam 8, Fly I, 112.66-113.86 meters, 0.56 m true thickness                                                              | BULK MAC ✓ |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                        | Sample No.    |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                        |               |
| 41      |         | 113.86 | 114.04 | .18                 | .08                 |                  | Coal                   | dull banded, good stick core                                                                                                           | BULK<br>MAC ✓ |
| 41      |         | 114.04 | 114.17 | .13                 | .06                 |                  | Coal                   | dull banded, some fusain lenses (black and powdery), irregular calcite-cemented lens in middle, good stick core                        |               |
| 41      |         | 114.17 | 114.40 | .23                 | .11                 | 114.9            | Coal                   | dull banded, calcite-cemented throughout, fusain lenses, good stick core. Seam 8, Ply II, 113.86-114.40 meters, 0.25 m true thickness. |               |
|         |         | 114.40 | 114.72 | .32                 | .15                 |                  | Lost Coal              |                                                                                                                                        |               |
| 41      |         | 114.72 | 114.92 | .20                 | .09                 |                  | Coal                   | dull banded, fusain lenses, good stick core                                                                                            |               |
| 41      |         | 114.92 | 114.99 | .07                 | .03                 |                  | Coal                   | dull, lustrous                                                                                                                         |               |
|         |         | 114.99 | 115.16 | .17                 | .08                 |                  | Lost Coal              |                                                                                                                                        |               |
| 41      |         | 115.16 | 115.19 | .03                 | .01                 |                  | Coal                   | ground and highly broken, dull and highly lustrous                                                                                     |               |
| 41      |         | 115.19 | 115.26 | .07                 | .03                 |                  | Coal                   | dull banded, abundant polished shear surfaces with calcite mineralization, moderately broken                                           |               |
| 41      |         | 115.26 | 115.38 | .12                 | .06                 |                  | Coal                   | dull banded, highly broken                                                                                                             |               |
| 41      |         | 115.38 | 115.45 | .07                 | .03                 |                  | Coal                   | dull, banded, shear surfaces, good core                                                                                                |               |
| 41      |         | 115.45 | 115.47 | .02                 | .01                 |                  | Coal                   | dull banded, broken into small pieces                                                                                                  |               |
| 41      |         | 115.47 | 115.54 | .07                 | .03                 |                  | Coal                   | powder, dull with bright                                                                                                               |               |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                |                                                                                                                   | Sample No.    |
|---------|---------|--------|--------|---------------------|---------------------|------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------|
|         |         | From   | To     |                     |                     |                  | MAIN                                  | Amplified (Include Coal Recovery for Each Seam)                                                                   |               |
| 41      |         | 115.54 | 115.79 | .25                 | .12                 |                  | Coal                                  | dull banded, broken at top                                                                                        | BULK<br>MAC ✓ |
| 41      |         | 115.79 | 115.82 | .03                 | .01                 |                  | Coal                                  | powder, dull with bright                                                                                          |               |
| 41      |         | 115.82 | 115.85 | .03                 | .01                 |                  | Coal<br>SAMPLE                        | dull banded, muddy, moderately broken<br><u>Seam 8, Ply III, 114.40-115.85 meters, 0.68 m true thickness.</u>     |               |
| 41      |         | 115.85 | 115.88 | .03                 |                     |                  | Coaly Mudstone                        | highly broken                                                                                                     |               |
|         |         | 115.88 | 116.21 | .33                 |                     |                  | Lost Core                             |                                                                                                                   |               |
| 41      |         | 116.21 | 116.87 | .66                 |                     | 116.7            | Mudstone                              | carbonaceous, carbonaceous and coaly plant fragments, coal stringers and band, calcite-lined slickensides at base |               |
| 42      |         | 116.87 | 117.11 | .24                 |                     |                  | Mudstone                              | coaly at top, as above                                                                                            |               |
|         |         | 117.11 | 117.25 | .14                 | .06                 |                  | Lost Coal                             |                                                                                                                   |               |
| 42      |         | 117.25 | 117.30 | .05                 | .02                 | 117.5            | Coal                                  | dull banded, broken and ground                                                                                    |               |
| 42      |         | 117.30 | 117.42 | .12                 | .05                 |                  | Coaly Mudstone                        | bright bands up to 1 cm thick                                                                                     |               |
|         |         | 117.42 | 117.54 | .12                 | .05                 |                  | Lost Coal                             |                                                                                                                   |               |
| 42      |         | 117.54 | 117.59 | .05                 | .02                 |                  | Coal                                  | dull with bright bands, ground at top                                                                             |               |
|         |         | 117.59 | 117.77 | .18                 | .08                 |                  | Lost Core                             |                                                                                                                   |               |
| 42      |         | 117.77 | 117.89 | .12                 | .05                 |                  | Coaly Mudstone/<br>Mudstone<br>SAMPLE | polished surfaces<br><u>Seam 9, Ply II, 117.59-117.89 meters, 0.14 m true thickness.</u>                          | BULK<br>MAC ✓ |

| Box No. | BCA (°) | Depth         |               | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION      |                                                                                                                                                                                                      | Sample No.    |
|---------|---------|---------------|---------------|---------------------|---------------------|------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|         |         | From          | To            |                     |                     |                  | MAIN                        | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                      |               |
| 42      |         | 117.89-118.01 | 118.01-118.30 | .12<br>.29          | .05<br>.13          |                  | Coal<br>Lost Coal           | bright, good stick core                                                                                                                                                                              | BULK<br>MAC ✓ |
| 42      |         | 118.30-118.50 |               | .20                 | .09                 |                  | Coal<br>SAMPLE              | powder, dull with bright, abrupt lower contact with mudstone, possible core loss at top<br>Seam 9, Ply I: 117.11-117.59 meters, 0.22 m true thickness<br>117.89-118.50 meters, 0.28 m true thickness |               |
| 42      |         | 118.50-119.97 |               | 1.47                |                     |                  | Mudstone                    | silty in middle, abundant carbonaceous plant fragments throughout, coal stringers throughout, carbonaceous and coaly at top                                                                          |               |
| 42      |         | 119.97-120.03 | 120.03-120.13 | .06<br>.10          |                     |                  | Coaly Mudstone<br>Lost Core | powder                                                                                                                                                                                               |               |
| 43      |         | 120.13-120.22 |               | .09                 |                     |                  | Silty Mudstone              |                                                                                                                                                                                                      |               |
| 43      |         | 120.22-122.02 |               | 1.80                |                     | 121.0            | Silty Mudstone              | carbonaceous plant fragments throughout, good stick core, calcite-lined fracture planes at 45° to core axis, homogeneous                                                                             |               |
| 43      |         | 122.02-122.12 | 122.12-122.19 | .10<br>.07          |                     |                  | Mudstone<br>Lost Core       | as above, highly broken into small pieces, abundant calcite veining, some pieces of coaly mudstone                                                                                                   |               |
| 43      |         | 122.19-122.49 |               | .30                 |                     |                  | Silty Mudstone              | as before, grading downward to siltstone at base                                                                                                                                                     |               |
| 43      | 20°     | 122.49-122.91 |               | .42                 |                     |                  | Siltstone/<br>Sandstone     | interlaminated, root structures, burrows                                                                                                                                                             |               |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                                                | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                |            |
| 44      | 22°     | 122.91 | 123.64 | .73                |                    | 123.7            | Siltstone                | with sandy interlamination which increase downward, calcite wisps parallel to bedding, calcite-lined fractures, burrows, root structures, carbonaceous plant fragments, concretionary nodules. | VIT 11 ✓   |
| 44      |         | 123.64 | 123.90 | .26                |                    |                  | Sandy Siltstone          | grading down to coaly mudstone, extremely broken, polished surfaces                                                                                                                            |            |
|         |         | 123.90 | 124.18 | .28                |                    |                  | Lost Coal/Coaly Mudstone |                                                                                                                                                                                                |            |
| 44      |         | 124.18 | 124.40 | .22                |                    |                  | Coal                     | powder, dull with bright, muddy at base                                                                                                                                                        |            |
| 44      |         | 124.40 | 125.71 | 1.31               |                    |                  | Siltstone/<br>Mudstone   | carbonaceous, polished surfaces, carbonaceous plant fragments, calcite-lined joints at 45° to core axis, top half is siltier, bottom half is muddier, occasional coal stringers.               |            |
| 45      |         | 125.71 | 126.13 | .42                |                    |                  | Siltstone                | grading to silty mudstone at base, homogeneous, carbonaceous plant fragments                                                                                                                   |            |
| 45      | 45°     | 126.13 | 127.22 | 1.09               |                    | 126.7            | Mudstone/<br>Siltstone   | bioturbated and churned, coal stringers throughout bottom half, calcite slickensides, lower half is broken, sandy rooted horizon at base                                                       |            |
| 45      |         | 127.22 | 127.32 | .10                |                    |                  | Coaly Mudstone           | extremely broken, calcite slickensided surfaces, possible core loss                                                                                                                            |            |
|         |         | 127.32 | 127.70 | .38                |                    |                  | Lost Core                |                                                                                                                                                                                                |            |
| 45      | 42°     | 127.70 | 128.37 | .67                |                    |                  | Silty Sandstone          | gradational upper contact, laminated zones, bioturbated and burrowed zones, soapy white mineral lining fracture surfaces at 45° to core axis.                                                  |            |



| Box No. | BCA (°)    | Depth         |               | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION       |                                                                                                                                                                                                                                                                       | Sample No. |
|---------|------------|---------------|---------------|---------------------|---------------------|------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From          | To            |                     |                     |                  | MAIN                         | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                       |            |
| 46      |            | 128.37-129.07 | 129.07-129.37 | .70<br>.30          |                     |                  | Silty Sandstone<br>Lost Core | as above, moderately broken, abundant veins of soapy white mineral                                                                                                                                                                                                    |            |
| 46      |            | 129.37-129.86 |               | .49                 |                     | 129.8            | Silty Sandstone              | as above, pyrite mineralization, moderately broken                                                                                                                                                                                                                    |            |
| 46      |            | 129.86-130.37 |               | .51                 |                     |                  | Siltstone/<br>Sandstone      | carbonaceous plant fragments, polished surfaces, abundant veins of soapy white mineral in breccia zones and open fractures, moderately broken.                                                                                                                        |            |
| 46      | 40°        | 130.37-131.21 |               | .84                 |                     | 130.1            | Sandy Siltstone              | breccia zones and veins throughout, bioturbated, some laminations, polished carbonaceous surfaces.                                                                                                                                                                    |            |
| 47      | 32°        | 131.21-132.62 |               | 1.41                |                     |                  | Sandstone/<br>Siltstone      | 10 cm thick breccia zone at 43 cm from top, lithologies are interlaminated, moderate bioturbation, abundant burrows in some zones, abundant fractures and soapy white mineral veins, some carbonaceous laminations, polished carbonaceous surfaces, occasional roots. |            |
| 47      | 32°        | 132.62-133.83 |               | 1.21                |                     | 133.2            | Sandstone/<br>Siltstone      | as above, pyrite concretions at top, broken white soapy mineralized zone 50 cm from top (SAMPLE C), numerous veins and fractures.                                                                                                                                     | "C"        |
| 48      | 30°<br>32° | 133.83-135.54 |               | 1.71                |                     |                  | Sandstone                    | argillaceous, carbonaceous laminations, zones of burrows and bioturbation, calcite veins and breccia zone.                                                                                                                                                            |            |
| 48      | 33°        | 135.54-136.28 |               | .74                 |                     | 136.2            | Siltstone                    | calcite veins, open fractures, breccia zones, mottled and bioturbated, root structures, slickensides                                                                                                                                                                  |            |
| 49      |            | 136.28-137.55 |               | 1.27                |                     |                  | Siltstone                    | grading downwards to mudstone with occasional silty interbeds, bottom half is broken, abundant polished carbonaceous surfaces and carbonaceous plant frag-ments, bottom 4 cm is coaly.                                                                                |            |
|         |            | 137.55-138.24 |               | .69                 |                     |                  | Lost Core                    |                                                                                                                                                                                                                                                                       |            |

| Box No. | BCA (°)  | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                        | Sample No. |
|---------|----------|---------------|----|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                        |            |
| 49      | 20°      | 138.24-139.01 |    | .77                |                    |                  | Mudstone/Siltstone     | interlaminated and interbedded, coal stringers, numerous polished surfaces, calcite slickensides, highly broken at base.                                                                                                               |            |
| 49      |          | 139.01-139.21 |    | .20                |                    | 139.3            | Mudstone/Siltstone     | as above, highly broken                                                                                                                                                                                                                |            |
|         |          |               |    |                    |                    |                  | 126.12-139.21          | is structurally disturbed (possible displacement)                                                                                                                                                                                      |            |
| 50      |          | 139.21-139.94 |    | .73                |                    |                  | Mudstone/Siltstone     | as above, very churned and bioturbated, broken near base                                                                                                                                                                               |            |
| 50      | 29<br>27 | 139.94-141.69 |    | 1.75               |                    |                  | Siltstone/Sandstone    | laminated zones, strongly bioturbated zones, coaly and carbonaceous plant fragments, carbonaceous laminations, wispy calcite throughout                                                                                                |            |
| 51      |          | 141.69-141.74 |    | .05                |                    |                  | Siltstone/Sandstone    | as above                                                                                                                                                                                                                               |            |
| 51      | 55°      | 141.74-143.3  |    | 1.56               |                    | 142.3            | Mudstone/Siltstone     | abundant carbonaceous and coaly plant fragments, bioturbated and churned, coaly zone at 43 cm from top, irregularly oriented calcite veins in middle, polished carbonaceous surfaces, coal stringers near base, highly broken at base. |            |
| 51      |          | 143.30-143.36 |    | .06                |                    |                  | Coaly Mudstone         | powder and small pieces                                                                                                                                                                                                                |            |
| 51      |          | 143.36-143.55 |    | .19                |                    |                  | Coal                   | sheared, dull, lustrous, some bright bands, broken                                                                                                                                                                                     | VIT 12 ✓   |
|         |          | 143.55-143.66 |    | .11                |                    |                  | Lost Coal              |                                                                                                                                                                                                                                        |            |
| 51      |          | 143.66-143.74 |    | .08                |                    |                  | Coaly Mudstone         | numerous thin bright wisps throughout                                                                                                                                                                                                  |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION   |                                                                                                                                                                                                                      | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                     | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                      |            |
| 51      |         | 143.74-143.79 |    | .05                |                    |                  | Coal/Coaly Mudstone      | powder                                                                                                                                                                                                               |            |
|         |         | 143.79-143.90 |    | .11                |                    |                  | Lost Coal/Coaly Mudstone |                                                                                                                                                                                                                      |            |
| 51      |         | 143.90-144.11 |    | .21                |                    |                  | Mudstone                 | carbonaceous, abundant carbonaceous plant fragments                                                                                                                                                                  |            |
| 51      |         | 144.11-144.30 |    | .19                | 144.8              |                  | Mudstone                 | as above                                                                                                                                                                                                             |            |
| 52      |         | 144.30-145.75 |    | 1.45               |                    |                  | Mudstone                 | as above, bottom half broken with abundant calcite slickensides, grades into siltstone in bottom 20 cm                                                                                                               |            |
| 52      | 32°     | 145.75-146.88 |    | 1.13               |                    |                  | Sandstone/Siltstone      | laminations, cross-laminations, burrows, vertical calcite-filled fractures, vertical calcite vein and breccia zone, microfaults, open fractures, carbonaceous interlamination, large calcite crystals, slickensides. |            |
| 53      |         | 146.88-147.09 |    | .21                | 147.8              |                  | Sandstone/Siltstone      | as above, vertical calcite vein                                                                                                                                                                                      |            |
| 53      |         | 147.09-149.39 |    | 2.30               |                    |                  | Mudstone                 | silty in places, siltstone at top, carbonaceous plant fragments, minor polished surfaces                                                                                                                             |            |
| 53      |         | 149.39-149.46 |    | .07                |                    |                  | Mudstone                 | broken, coal stringers                                                                                                                                                                                               |            |
|         |         | 149.46-149.52 |    | .06                |                    |                  | Lost Core                |                                                                                                                                                                                                                      |            |
| 54      |         | 149.52-149.62 |    | .10                |                    |                  | Mudstone                 | coaly, polished carbonaceous surfaces                                                                                                                                                                                |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                |            |
| 54      |         | 149.62 | 149.66 | .04                |                    |                  | Coaly Mudstone         | small pieces                                                                                                                                                                                                   |            |
| 54      |         | 149.66 | 149.68 | .02                |                    |                  | Coal/Coaly Mudstone    | powder                                                                                                                                                                                                         |            |
|         |         | 149.68 | 150.06 | .38                |                    |                  | Lost Coal              |                                                                                                                                                                                                                |            |
| 54      |         | 150.06 | 150.17 | .11                |                    | 150.8            | Mudstone               | coaly, polished surfaces, carbonaceous plant fragments, broken                                                                                                                                                 |            |
| 54      |         | 150.17 | 151.52 | 1.35               |                    |                  | Mudstone               | highly polished surfaces throughout, carbonaceous, coal stringers, carbonaceous plant fragments, coaly mudstone interbed 50 cm from base, moderately broken, some calcite veins.                               |            |
| 54      |         | 151.52 | 151.98 | .46                |                    |                  | Mudstone               | as above, coaly, broken                                                                                                                                                                                        |            |
| 54      |         | 151.98 | 152.44 | .09                |                    |                  | Coaly Mudstone         | powder                                                                                                                                                                                                         |            |
| 54      |         | 152.44 | 152.54 | .10                |                    |                  | Coaly Mudstone         | broken into small pieces                                                                                                                                                                                       |            |
|         |         | 152.54 | 152.67 | .13                |                    |                  | Lost Core              |                                                                                                                                                                                                                |            |
| 55      | 28      | 152.67 | 154.31 | 1.64               |                    | 155.3            | Siltstone/<br>Mudstone | thinly interbedded, grades to mudstone at the base, highly churned and bioturbated, burrows, calcite wisps, abundant carbonaceous plant fragments, coal wisps at base, polished carbonaceous surfaces at base. |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                 | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam) |            |
| 55      |         | 154.31 | 154.48 | .17                 |                     |                  | Mudstone               | coaly with 2 cm thick bright band               | VIT 13 ✓   |
| 55      |         | 154.48 | 154.55 | .07                 |                     |                  | Coaly Mudstone         |                                                 |            |
| 55      |         | 154.55 | 154.58 | .03                 | .01                 |                  | Coal                   | dull banded, broken                             |            |
| 55      |         | 154.58 | 154.66 | .08                 | .04                 |                  | Coal                   | powder, dull with bright                        |            |
|         |         | 154.66 | 154.97 | .31                 | .15                 |                  | Lost Coal              |                                                 |            |
| 55      |         | 154.97 | 155.04 | .07                 | .03                 | 155.7            | Coaly Mudstone         |                                                 |            |
| 55      |         | 155.04 | 155.06 | .02                 | .01                 |                  | Coal                   | broken, dull banded                             |            |
| 55      |         | 155.06 | 155.10 | .04                 | .02                 |                  | Coal                   | bright banded, broken                           |            |
| 55      |         | 155.10 | 155.16 | .06                 | .03                 |                  | Coal                   | dull and bright                                 |            |
| 55      |         | 155.16 | 155.20 | .04                 | .02                 |                  | Coal                   | dull banded, highly broken                      |            |
| 55      |         | 155.20 | 155.23 | .03                 | .01                 |                  | Coal                   | dull banded, lustrous due to shearing, broken   |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION     |                                                                                                                                                                                                        | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                       | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                        |            |
| 55      |         | 155.23-155.26 |    | .03                | .01                |                  | Coal                       | broken into small pieces, dull with bright                                                                                                                                                             | 1/4 Ward   |
| 55      |         | 155.26-155.30 |    | .04                | .02                |                  | Coal                       | dull banded, fusain lenses, broken                                                                                                                                                                     |            |
| 55      |         | 155.30-155.33 |    | .03                | .01                |                  | Coal                       | dull banded, lustrous due to shearing, broken                                                                                                                                                          |            |
|         |         | 155.33-156.69 |    | 1.36               | .64                |                  | Lost Coal                  |                                                                                                                                                                                                        |            |
| 55      |         | 156.69-156.76 |    | .07                | .03                |                  | Ash Band 3                 | carbonaceous, silvery-grey                                                                                                                                                                             |            |
|         |         | 156.76-156.86 |    | .10                | .05                |                  | Lost Core                  |                                                                                                                                                                                                        |            |
| 56      |         | 156.86-156.94 |    | .08                | .04                | 157.3            | Coal                       | dull banded, broken into small pieces                                                                                                                                                                  |            |
|         |         | 156.94-157.40 |    | .46                | .22                |                  | Lost Coal<br>SAMPLE        | Seam 10, 154.55-157.40 meters, 1.34 meters true thickness                                                                                                                                              |            |
| 56      |         | 157.40-157.58 |    | .18                |                    |                  | Mudstone                   | coaly, thin ash band in middle                                                                                                                                                                         |            |
|         |         | 157.58-158.00 |    | .42                |                    |                  | Lost Core                  |                                                                                                                                                                                                        |            |
|         |         | 158.00-158.65 |    | .65                |                    |                  | Lost Coal/<br>Mudstone     |                                                                                                                                                                                                        |            |
| 56      |         | 158.65-159.48 |    | .83                |                    |                  | Mudstone/Coaly<br>Mudstone | abundant carbonaceous plant fragments, polished surfaces, vertical mirror-bright polished surfaces at base, moderately broken throughout, highly broken at base, very coaly at base, some coal pieces. |            |
| 56      |         | 159.48-160.01 |    | .53                |                    | 158.4            | Mudstone/Coaly<br>Mudstone | as above, highly broken and coaly at base, moderately broken throughout                                                                                                                                |            |
| 56      |         | 160.01-160.67 |    | .66                |                    | 160.3            | Mudstone/<br>Siltstone     | abundant carbonaceous plant fragments, coal wisps, calcite veins near base, bioturbated                                                                                                                |            |

BULK MAC ✓

| Box No. | BCA (°)    | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                     | Sample No. |
|---------|------------|---------------|----|---------------------|---------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From          | To |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                     |            |
| 57      | 30°<br>35° | 160.67-162.96 |    | 2.29                |                     |                  | Siltstone/<br>Sandstone | thinly interbedded, sandy interbed near top, abundant bioturbation and burrows, abundant root structures, broken at top, calcite veins at 45° to core axis, broken at base, carbonaceous plant fragments, polished carbonaceous surfaces near base. |            |
| 57      |            | 162.96-163.25 |    | .29                 |                     | 163.4            | Siltstone/<br>Mudstone  | as above                                                                                                                                                                                                                                            |            |
| 58      | 20°        | 163.25-163.91 |    | .66                 |                     |                  | Siltstone/<br>Mudstone  | as above                                                                                                                                                                                                                                            |            |
| 58      |            | 163.91-165.28 |    | 1.37                |                     |                  | Mudstone                | carbonaceous plant fragments throughout, calcite wisps parallel to bedding, grades downward to siltstone.                                                                                                                                           |            |
| 58      |            | 165.28-165.73 |    | .45                 |                     |                  | Siltstone               | carbonaceous plant fragments, mottled and bioturbated throughout.                                                                                                                                                                                   |            |
| 58      | 25°        | 165.73-165.94 |    | .21                 |                     | 166.4            | Siltstone               | with mudstone interlamination, mottled and bioturbated                                                                                                                                                                                              |            |
| 59      | 29°<br>30° | 165.94-168.13 |    | 2.19                |                     |                  | Siltstone               | with mudstone and sandstone laminations and interbeds sandier towards base, calcite wisps parallel to bedding, highly broken at base and in middle, calcite veins at high angle to core axis.                                                       |            |
| 59      |            | 168.13-168.61 |    | .48                 |                     | 169.5            | Siltstone               | as above                                                                                                                                                                                                                                            |            |
| 60      | 30°        | 168.61-169.33 |    | .72                 |                     |                  | Sandstone/<br>Siltstone | laminated, some bioturbated and burrowed zones, carbonaceous laminations, calcite veins and wisps at high angle to core axis, carbonaceous plant material                                                                                           |            |
| 60      |            | 169.33-170.55 |    | 1.22                |                     |                  | Mudstone                | with silty interlamination (especially at top), gradational with overlying unit, rare carbonaceous plant fragments and polished surfaces                                                                                                            |            |

| Box No. | BCA (°)           | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                  | Sample No. |
|---------|-------------------|--------|--------|---------------------|---------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                   | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                  |            |
| 60      |                   | 170.55 | 170.65 | .10                 |                     |                  | Mudstone/Coaly Mudstone | highly broken                                                                                                                                                                                                                    | VIT 14 ✓   |
| 60      |                   | 170.65 | 170.72 | .07                 |                     |                  | Coaly Mudstone/Coal     | powder                                                                                                                                                                                                                           |            |
|         |                   | 170.72 | 171.30 | .58                 |                     |                  | Lost Coal               |                                                                                                                                                                                                                                  |            |
| 60      |                   | 171.30 | 171.72 | .42                 |                     |                  | Mudstone                | coaly in middle, silty in places, 2 thick bright bands                                                                                                                                                                           |            |
| 61      |                   | 171.72 | 171.95 | .23                 |                     |                  | Siltstone               | polished surfaces, carbonaceous plant fragments                                                                                                                                                                                  |            |
| 61      |                   | 171.95 | 172.08 | .13                 |                     |                  | Brecciated Mudstone     | irregularly oriented calcite veins throughout, curved polished surfaces throughout                                                                                                                                               |            |
| 61      |                   | 172.08 | 173.60 | 1.52                |                     |                  | Siltstone               | with mudstone and sandstone interlamination, bioturbated, calcite-lined fractures at 50° to core axis, moderately broken at base                                                                                                 |            |
|         |                   | 173.60 | 173.80 | .20                 |                     |                  | Lost Core               |                                                                                                                                                                                                                                  |            |
| 61      | 26°<br>30°<br>15° | 173.80 | 174.39 | .59                 |                     |                  | Siltstone               | as above, numerous calcite veins in top 20 cm, sandstone predominates at base                                                                                                                                                    |            |
| 62      |                   | 174.39 | 175.13 | .74                 |                     |                  | Sandstone               | with mudstone interlamination, root structures, burrows, sandstone is argillaceous and very fine to upper fine in grain size, calcite veins at high angle to core axis, some carbonaceous interlamination and polished surfaces. |            |



| Box No. | BCA (°) | Depth         |               | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                       | Sample No. |
|---------|---------|---------------|---------------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To            |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                       |            |
| 62      | 29      | 175.13-175.56 | 175.56-175.82 | .43<br>.32          |                     | 175.8            | Sandstone<br>Lost Core | as above, lower half is broken                                                                                                                                                                                                                                                        |            |
| 62      | 21      | 175.82-177.14 |               | 1.32                |                     | 176.3            | Sandstone              | as above                                                                                                                                                                                                                                                                              |            |
| 63      | 25      | 177.14-178.13 |               | .99                 |                     |                  | Sandstone              | with very thin mudstone interbeds, broken at top, calcite veins at high angle to bedding, distinctly laminated.                                                                                                                                                                       |            |
| 63      | 17      | 178.13-179.76 |               | 1.63                |                     | 178.9            | Sandstone              | with mudstone interlamina-tions, some carbonaceous interlamina-tions, burrows, root structures, numerous calcite veins both perpendicular to bedding and parallel to core axis, calcite filled tension gashes and open fractures in bottom half, slickensides, distinct lamina-tions. |            |
| 64      | 21      | 179.76-181.21 |               | 1.45                |                     |                  | Sandstone              | as above, calcite veins throughout, broken near base                                                                                                                                                                                                                                  |            |
| 64      | 8       | 181.21-182.36 |               | 1.15                |                     | 181.9            | Sandstone              | as above, very thin mudstone interbeds, a few calcite veins at high angle to bedding.                                                                                                                                                                                                 |            |
| 65      | 18      | 182.36-184.25 |               | 1.89                |                     |                  | Sandstone              | as above, a few calcite veins at high angle to bedding, numerous siltstone interlamina-tions and very thin interbeds                                                                                                                                                                  |            |
| 65      | 38      | 184.25-184.95 |               | .70                 |                     |                  | Sandstone              | as above, mudstone interbed in middle, a few calcite wisps perpendicular to bedding near base of unit                                                                                                                                                                                 |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                |            |
| 66      |         | 184.95-186.28 |    | 1.33                |                     |                  | Sandstone/<br>Siltstone | distinctly laminated, burrows, root structures, a few calcite veins perpendicular to bedding                                                   |            |
| 66      |         | 186.28-186.96 |    | .68                 |                     |                  | Mudstone/<br>Siltstone  | faintly laminated, no plant remains                                                                                                            |            |
| 66      |         | 186.96-187.01 |    | .05                 |                     |                  | Mudstone/<br>Siltstone  | as above, highly broken                                                                                                                        |            |
| 66      |         | 187.01-187.45 |    | .44                 |                     | 188.1            | Mudstone                | silty, coaly plant remains                                                                                                                     |            |
| 67      |         | 187.45-189.97 |    | 2.52                |                     |                  | Mudstone                | silty at top, silty zones throughout, some horizons have abundant carbonaceous plant fragments, polished surfaces and calcite veins near base. |            |
| 68      |         | 189.97-191.30 |    | 1.33                |                     | 191.1            | Silty Mudstone          | mottled and churned, siltstone interbed at base, polished carbonaceous surface, near vertical calcite vein, carbonaceous plant fragments.      |            |
|         |         | 191.30-192.00 |    | .70                 |                     |                  | Lost Coal               |                                                                                                                                                |            |
|         |         | 192.20-192.27 |    | .27                 |                     |                  | Lost Core               |                                                                                                                                                |            |
| 68      |         | 192.27-193.19 |    | .92                 |                     | 192.9            | Silty Mudstone          | as above                                                                                                                                       |            |
| 68      |         | 193.19-193.50 |    | .31                 |                     |                  | Silty Mudstone          | as above, highly broken, highly polished and sheared, coaly and broken at base                                                                 |            |
|         |         | 193.50-194.80 |    | 1.30                |                     |                  | Lost Coal               |                                                                                                                                                |            |
| 69      | 33°     | 194.80-195.88 |    | 1.08                |                     | 195.4            | Mudstone/<br>Siltstone  | broken and carbonaceous at top, carbonaceous plant fragments throughout                                                                        |            |
|         |         | 195.88-196.32 |    | .44                 |                     |                  | Lost Core               |                                                                                                                                                |            |

| Box No. | BCA (°)    | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION      |                                                                                                                                                                                                                                                                                      | Sample No. |
|---------|------------|--------|--------|---------------------|---------------------|------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                     |                     |                  | MAIN                        | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                      |            |
| 69      |            | 196.32 | 196.88 | .56                 |                     | 197.2            | Silty Mudstone              | broken and carbonaceous at top, carbonaceous plant fragments, calcite veins and polished surfaces near base.                                                                                                                                                                         |            |
| 69      |            | 196.88 | 197.52 | .64                 |                     |                  | Siltstone/<br>Mudstone      | sandy with cross laminations at base, calcite veins perpendicular to bedding near base, polished surfaces near base.                                                                                                                                                                 |            |
| 70      | 44°<br>42° | 197.52 | 199.35 | 1.83                |                     |                  | Sandstone                   | with siltstone and mudstone interlaminations and interbeds throughout upper 2/3, moderately broken, extremely bioturbated, root structures, calcite veins at 45° to core axis in lower 1/3 of unit, polished carbonaceous surfaces near top, carbonaceous and coaly plant fragments. |            |
| 70      | 30°        | 199.35 | 199.89 | .54                 |                     | 200.2            | Sandstone/<br>Siltstone     | grades to mudstone at base, laminated at top, bioturbated at bottom                                                                                                                                                                                                                  |            |
| 71      |            | 199.89 | 200.80 | .91                 |                     |                  | Mudstone                    | silty in places, coaly wisps, coaly plant fragments, coaly at base                                                                                                                                                                                                                   |            |
| 71      |            | 200.80 | 200.87 | .07                 |                     |                  | Coaly Mudstone/<br>Coal     | powder                                                                                                                                                                                                                                                                               |            |
|         |            | 200.87 | 201.55 | .68                 |                     |                  | Lost Coal/Coaly<br>Mudstone |                                                                                                                                                                                                                                                                                      |            |
| 71      | 24°        | 201.55 | 202.38 | .83                 |                     |                  | Siltstone/<br>Sandstone     | muddy at top, distinctly laminated, roots, burrows, broken at top and bottom, polished carbonaceous surfaces parallel to bedding.                                                                                                                                                    |            |
| 71      | 22°<br>23° | 202.38 | 203.04 | .66                 |                     | 203.3            | Siltstone/<br>Sandstone     | as above, calcite veins parallel, and perpendicular to bedding                                                                                                                                                                                                                       |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                      | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                      |            |
| 72      | 28°     | 203.00-205.47 |    | 2.43                |                     |                  | Siltstone/<br>Sandstone | as above, sandier in bottom half, clean joint surfaces at 40° to core axis, some polished carbonaceous surfaces parallel to bedding, some calcite veins perpendicular to bedding.                                                                                    |            |
|         |         | 205.47-205.58 |    | .11                 |                     |                  | Lost Core               |                                                                                                                                                                                                                                                                      |            |
| 72      |         | 205.58-205.89 |    | .31                 |                     | 206.3            | Siltstone/<br>Sandstone | as above                                                                                                                                                                                                                                                             |            |
| 73      | 20°     | 205.89-207.22 |    | 1.33                |                     |                  | Sandstone               | with mudstone and siltstone interbeds and interlamina-tions, calcite veins perpendicular to bedding, abundant root structures, carbonaceous polished surfaces parallel to bedding, sandstone is argillaceous, very fine grained to fine upper and medium light grey. |            |
|         |         | 207.22-207.37 |    | .15                 |                     |                  | Lost Core               |                                                                                                                                                                                                                                                                      |            |
| 73      |         | 207.37-208.65 |    | 1.28                |                     | 207.8            | Sandstone               | as above, concretion nodules near base                                                                                                                                                                                                                               |            |
| 74      |         | 208.65-208.76 |    | .11                 |                     |                  | Sandstone               | as above                                                                                                                                                                                                                                                             |            |
|         |         | 208.76-208.91 |    | .15                 |                     |                  | Lost Core               |                                                                                                                                                                                                                                                                      |            |
| 74      |         | 208.91-209.11 |    | .20                 |                     | 209.3            | Sandstone               | as above, mottled and bioturbated, gradational lower contact to siltstone below (This sandstone (205.89-209.11) is not a channel. It is probably upper point bar - no cross beds, lots of roots.)                                                                    |            |
| 74      |         | 209.11-209.64 |    | .53                 |                     |                  | Siltstone               | muddy at base, coaly wisps at base, abundant carbonaceous plant fragments throughout                                                                                                                                                                                 |            |
| 74      |         | 209.64-209.68 |    | .04                 | .02                 |                  | Coal                    | dull banded                                                                                                                                                                                                                                                          |            |
| 74      |         | 209.68-209.73 |    | .05                 | .02                 |                  | Coal                    | broken, dull with some bright bands, lustrous sheared surfaces                                                                                                                                                                                                       |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION          |                                                                                              | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|---------------------------------|----------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                            | Amplified (Include Coal Recovery for Each Seam)                                              |            |
| 74      |         | 209.73 | 209.82 | .09                | .04                |                  | Coal                            | good core, dull banded, some lustrous shear surfaces                                         | VIT 15 ✓   |
| 74      |         | 209.82 | 209.85 | .03                | .01                |                  | Coal                            | broken, dull banded                                                                          |            |
| 74      |         | 209.85 | 210.13 | .28                | .12                |                  | Coal                            | powder, dull                                                                                 |            |
|         |         | 210.13 | 211.83 | 1.70               | .75                |                  | Lost Coal                       |                                                                                              |            |
| 74      |         | 211.83 | 211.90 | .07                | .03                | 211.4            | Coal                            | powder, dull                                                                                 | BULK MAC ✓ |
| 74      |         | 211.90 | 212.02 | .12                | .05                |                  | Coal                            | broken, dull                                                                                 |            |
| 74      |         | 212.02 | 212.12 | .10                | .04                |                  | Coal SAMPLE                     | dull, lustrous sheen<br><u>Seam II, Ply I</u> , 209.64-212.12 meters, 1.09 m true thickness. |            |
| 74      |         | 212.12 | 212.19 | .07                | .03                |                  | Coaly Mudstone                  |                                                                                              |            |
| 74      |         | 212.19 | 212.50 | .31                | .14                |                  | Lost Core                       |                                                                                              |            |
|         |         | 212.50 | 212.52 | .02                | .01                |                  | Coal                            | dull                                                                                         |            |
| 74      |         | 212.52 | 212.63 | .11                | .05                |                  | Coaly Mudstone                  | bright coal bands up to .5 cm thick                                                          |            |
| 74      |         | 212.63 | 212.71 | .08                | .04                |                  | Coaly Mudstone                  | broken, polished surfaces                                                                    |            |
|         |         | 212.71 | 213.30 | .59                | .26                |                  | Lost Core                       |                                                                                              |            |
| 75      |         | 213.30 | 213.47 | .17                | .07                | 213.3            | Coaly Mudstone                  | bright coal bands, polished surfaces, calcite stringers                                      | BULK MAC ✓ |
| 75      |         | 213.47 | 213.50 | .03                | .01                |                  | Coal                            | broken into small pieces, dull banded                                                        |            |
|         |         | 213.50 | 213.79 | .29                | .13                |                  | Lost Coal/Coaly Mudstone SAMPLE | <u>Seam II, Ply II</u> , 212.12-213.79 meters, 0.73 m true thickness.                        |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m)        | LITHOLOGIC DESCRIPTION                                               |                                                                                                                                                                                | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|-------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                         | MAIN                                                                 | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                |            |
| 75      |         | 213.79 | 214.56 | .77                |                    |                         | Mudstone                                                             | carbonaceous and coaly plant fragments throughout, polished surfaces, mudstone appears to be highly sheared, carbonaceous with coaly fragments at base, calcite wisps at base. | VIT 16 ✓   |
| 75      |         | 214.56 | 215.28 | .72                | 215.2              | Mudstone                | as above, highly polished surfaces, highly broken, calcite veins     |                                                                                                                                                                                |            |
| 75      |         | 215.28 | 215.58 | .30                |                    | Coaly Mudstone          | highly broken, polished and sheared, bright bands up to .75 cm thick |                                                                                                                                                                                |            |
| 75      |         | 215.58 | 215.68 | .10                |                    | Coaly Mudstone          | stick core, as above                                                 |                                                                                                                                                                                |            |
| 75      |         | 215.68 | 215.75 | .07                |                    | Coaly Mudstone/<br>Coal | highly broken                                                        |                                                                                                                                                                                |            |
| 75      |         | 215.75 | 215.87 | .12                |                    | Coaly Mudstone          |                                                                      |                                                                                                                                                                                |            |
| 76      | 10      | 215.87 | 216.19 | .32                |                    | Mudstone                | coaly, moderately broken                                             |                                                                                                                                                                                |            |
| 76      |         | 216.19 | 216.23 | .04                |                    | Coaly Mudstone/<br>Coal | powder                                                               |                                                                                                                                                                                |            |
|         |         | 216.23 | 216.64 | .41                |                    | Lost Core               |                                                                      |                                                                                                                                                                                |            |
| 76      |         | 216.64 | 216.72 | .08                |                    | Mudstone                | coaly, highly broken                                                 |                                                                                                                                                                                |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION            |                                                                                                                                                                                                                                                  | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                              | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                  |            |
| 76      | 18      | 216.72 | 218.05 | 1.33                |                     | 217.0            | Siltstone                         | grading downward to siltstone/sandstone, gradational contact with overlying mudstone, bioturbated, root structures, contorted laminations, calcite veins perpendicular to bedding, open fracture, top is muddy and carbonaceous with coal wisps. |            |
| 76      | 16      | 218.05 | 218.70 | .65                 |                     | 218.5            | Siltstone/<br>Sandstone           | as above, abundant root structures, occasional coaly plant remains.                                                                                                                                                                              |            |
| 77      | 10      | 218.70 | 221.12 | 2.42                |                     |                  | Siltstone                         | sandy interbeds at top, mudstone interbeds in lower half, highly bioturbated and mottled, rootlets, calcite veins perpendicular to bedding.                                                                                                      |            |
| 77      |         | 221.12 | 221.31 | .19                 |                     | 221.5            | Siltstone                         | as above                                                                                                                                                                                                                                         |            |
|         |         | 221.31 | 221.80 | .49                 |                     |                  | Lost Core                         |                                                                                                                                                                                                                                                  |            |
|         |         | 221.80 | 222.05 | .25                 |                     |                  | Lost Coal                         |                                                                                                                                                                                                                                                  |            |
| 78      |         | 222.05 | 223.06 | 1.01                |                     |                  | Silty Mudstone/<br>Coaly Mudstone | carbonaceous plant fragments, polished surfaces, calcite veins at top, some coaly plant remains.                                                                                                                                                 |            |
|         |         | 223.06 | 225.02 | 1.96                |                     |                  | Lost Core                         |                                                                                                                                                                                                                                                  |            |
| 78      |         | 225.02 | 225.96 | .94                 |                     | 224.6            | Coaly Mudstone/<br>Silty Mudstone | as above, broken, highly polished surfaces (sheared throughout)                                                                                                                                                                                  |            |
|         |         | 225.96 | 226.50 | .54                 | .16                 |                  | Lost Coal                         |                                                                                                                                                                                                                                                  |            |
| 78      |         | 226.50 | 226.67 | .17                 | .05                 | 226.5            | Coal                              | broken into small pieces, sheared, dull with some bright bands                                                                                                                                                                                   |            |
|         |         | 226.67 | 227.70 | 1.03                | .30                 |                  | Lost Coal                         |                                                                                                                                                                                                                                                  |            |
| 79      |         | 227.70 | 228.01 | .31                 | .09                 | 227.7            | Coal                              | dull, highly broken, some pieces have muddy lenses, highly sheared, lustrous due to shearing.                                                                                                                                                    |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                     | Sample No.    |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                     |               |
| 79      |         | 228.01 | 228.06 | .05                 | .01                 |                  | Coal                   | powder, dull                                                                                                                                        | BULK<br>MAC ✓ |
| 79      |         | 228.06 | 228.09 | .03                 | .01                 |                  | Coal                   | broken, dull, highly sheared                                                                                                                        |               |
|         |         | 228.09 | 228.21 | .12                 | .03                 |                  | Lost Coal              |                                                                                                                                                     |               |
| 79      |         | 228.21 | 228.40 | .09                 | .03                 | 228.6            | Coal/Coaly<br>Mudstone | broken into pieces                                                                                                                                  |               |
|         |         | 228.40 | 228.88 | .48                 |                     |                  | Lost Coal<br>SAMPLE    | <u>Seam 12</u> , 225.96-228.88 meters, 0.85 m true thickness                                                                                        |               |
| 79      |         | 228.88 | 230.01 | 1.13                |                     |                  | Siltstone              | carbonaceous, coaly stringers throughout, carbonaceous and coaly plant fragments, polished carbonaceous surfaces, mottled and churned in upper half |               |
| 79      |         | 230.01 | 230.06 | .05                 |                     | 230.7            | Siltstone              | as above, coaly                                                                                                                                     |               |
|         |         | 230.06 | 231.64 | 1.58                | .49                 |                  | Lost Coal              |                                                                                                                                                     |               |
| 79      |         | 231.64 | 231.74 | .10                 | .03                 |                  | Coal                   | dull, extremely sheared                                                                                                                             |               |
| 79      |         | 231.74 | 231.78 | .04                 | .01                 |                  | Coal                   | dull, powder                                                                                                                                        |               |
| 79      |         | 231.78 | 231.84 | .06                 | .02                 |                  | Coal                   | dull, extremely sheared                                                                                                                             |               |
| 79      |         | 231.84 | 231.86 | .02                 | .01                 |                  | Coal                   | dull, powder                                                                                                                                        |               |



| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                             | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                             |            |
| 80      |         | 231.86 | 232.00 | .14                 | .04                 |                  | Coal                    | powder, dull with some bright                                                                                                                                                                               | VIT 17 ✓   |
| 80      |         | 232.00 | 232.05 | .05                 | .02                 |                  | Coal                    | broken into small pieces, sheared, dull                                                                                                                                                                     |            |
| 80      |         | 232.05 | 232.14 | .09                 | .03                 | 231.95           | Coal                    | dull, some bright bands, extremely sheared, breaks easily to powder                                                                                                                                         |            |
| 80      |         | 232.14 | 232.16 | .02                 | .01                 | 233.47           | Coaly Mudstone/<br>Coal | powder and small pieces                                                                                                                                                                                     |            |
|         |         | 232.16 | 232.48 | .32                 | .10                 |                  | Lost Core               |                                                                                                                                                                                                             |            |
|         |         | 232.48 | 234.32 | 1.84                | .57                 |                  | Lost Coal<br>SAMPLE     | <u>Seam 13</u> , 230.06-234.32 meters, 1.32 m true thickness                                                                                                                                                |            |
| 80      |         | 234.32 | 234.88 | .56                 |                     |                  | Mudstone/<br>Siltstone  | polished carbonaceous surfaces throughout, abundant calcite veins, calcite breccia and rehealed zone in middle, moderately broken core, coal wisps especially near top, muddier at top and siltier at base. |            |
| 80      |         | 234.88 | 235.97 | 1.09                |                     |                  | Siltstone/<br>Mudstone  | thin interbeds and interlaminations, highly broken in middle, numerous calcite veins, breccia zones, calcite wisps, polished carbonaceous surfaces.                                                         |            |
| 81      |         | 235.97 | 236.11 | .14                 |                     |                  | Siltstone/<br>Mudstone  | as above                                                                                                                                                                                                    |            |
| 81      |         | 236.11 | 236.73 | .62                 |                     | 236.8            | Siltstone/<br>Sandstone | thinly interbedded and laminated, highly broken throughout, numerous calcite veins and polished carbonaceous surfaces.                                                                                      |            |
|         |         | 236.73 | 237.35 | .62                 |                     |                  | Lost Core               |                                                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                       | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                       |            |
| 81      | 21      | 237.35 | 238.68 | 1.33               |                    | 237.4            | Siltstone               | with sandstone and mudstone interbeds and interlamination throughout, grades downward to a silty mudstone, roots, bioturbated zones, calcite veins, core is moderately broken, zones of abundant calcite wisps parallel to bedding.                   |            |
| 82      | 18      | 238.68 | 239.96 | 1.28               |                    | 238.9            | Mudstone                | with siltstone interlamination and silty beds throughout, carbonaceous polished surfaces, carbonaceous and coaly plant fragments throughout, zones of calcite wisps parallel to bedding, calcite veins perpendicular to bedding, coaly wisps at base. |            |
|         |         | 239.96 | 240.46 | .50                |                    |                  | Lost Coal               |                                                                                                                                                                                                                                                       |            |
| 82      |         | 240.46 | 240.50 | .04                |                    | 240.7            | Coal                    | dull, sheared, crumbles to powder, broken, powdered at top                                                                                                                                                                                            |            |
| 82      |         | 240.50 | 241.49 | .99                |                    |                  | Mudstone                | coaly near top, sheared, polished surfaces and calcite veins throughout, broken throughout, coaly stringers                                                                                                                                           |            |
|         |         | 241.49 | 241.60 | .11                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                       |            |
|         |         | 241.60 | 242.10 | .50                |                    |                  | Lost Core               | (coaly mudstone)                                                                                                                                                                                                                                      |            |
| 83      |         | 242.10 | 242.80 | .70                |                    | 242.3            | Mudstone                | as above, numerous coaly stringers, calcite and carbonaceous lined polished surfaces, highly broken, silty towards base.                                                                                                                              |            |
|         |         | 242.80 | 243.35 | .55                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                       |            |
| 83      |         | 243.35 | 244.17 | .82                |                    | 243.8            | Siltstone/<br>Sandstone | interbedded and interlaminated, highly bioturbated, root structures, calcite stringers perpendicular to bedding                                                                                                                                       |            |
| 83      |         | 244.17 | 244.89 | .72                |                    |                  | Silty Mudstone          | calcite stringers perpendicular to bedding, some carbonaceous plant fragments.                                                                                                                                                                        |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                     | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                     |            |
| 84      |         | 244.89 | 245.33 | .44                |                    |                  | Sandstone/<br>Siltstone | highly bioturbated, churned and mottled, medium light grey, upper fine grain size, argillaceous, some carbonaceous interlamination.                                                 |            |
| 84      |         | 245.33 | 245.46 | .13                |                    |                  | Calcite Breccia         | veins, open fractures, 40% calcite: 60% sandstone with calcite veins                                                                                                                |            |
| 84      |         | 245.46 | 245.56 | .10                |                    |                  | Sandstone               | highly bioturbated, mottled and churned                                                                                                                                             |            |
| 84      |         | 245.56 | 247.48 | 1.92               |                    | 245.9            | Siltstone               | mottled and churned, sandy lenses throughout, sandy in middle, concretionary nodules, abundant burrows, calcite vein with open fracture in middle and near base, medium grey color. |            |
| 85      |         | 247.48 | 248.61 | 1.13               |                    |                  | Silty Sandstone         | churned and bioturbated, burrows, calcite vein near top, carbonaceous root structures.                                                                                              |            |
| 85      |         | 248.61 | 250.28 | 1.67               |                    | 249.0            | Siltstone               | medium dark grey, bottom half is sandy, highly bioturbated, mottled and churned                                                                                                     |            |
| 86      |         | 250.28 | 250.96 | .68                |                    |                  | Siltstone               | as above, sandy at base                                                                                                                                                             |            |
| 86      |         | 250.96 | 251.66 | .70                |                    |                  | Sandstone               | highly bioturbated, numerous burrows, medium grey, silty                                                                                                                            |            |
| 86      |         | 251.66 |        |                    |                    | 252.1            |                         | End of hole - total depth corrected for height of drill table.                                                                                                                      |            |

ESSO RESOURCES CANADA LIMITED - COAL DIVISION  
CORE & COAL CORE DESCRIPTION

|          |               |
|----------|---------------|
| Project  | Falling Creek |
| Map Area | 930, 93P      |

|       |          |
|-------|----------|
| Begin | 11/07/83 |
| End   | 14/07/83 |

|                  |           |
|------------------|-----------|
| Core Examiner(s) | D. Hallas |
|------------------|-----------|

|          |       |
|----------|-------|
| Hole No. | 83-20 |
|----------|-------|

Hole Particulars

|             |               |              |     |
|-------------|---------------|--------------|-----|
| Location    | 44660 m North |              |     |
|             | 56100 m East  |              |     |
| Elevation   | 1575 m        | Hole Bearing |     |
| Total Depth | 232.97        | Hole Angle   | 90° |

Coal Coring Performance

|                |        |
|----------------|--------|
| Core Diameter  | HQ     |
| Core Recovered | 208.49 |
| Length Cored   | 224.30 |
| Core Recovery  | 93.0 % |

Logging

|           |          |
|-----------|----------|
| Logged By | BPB      |
|           | Neutron  |
|           | CCS      |
|           | LSD/BRD  |
|           | DIPMETER |

|                  |           |
|------------------|-----------|
| Examination Date | July 1983 |
|------------------|-----------|

| Box No. | BCA (°) | Depth |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                 | Sample No. |
|---------|---------|-------|----|--------------------|--------------------|------------------|------------------------|-------------------------------------------------|------------|
|         |         | From  | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam) |            |
|         |         |       |    |                    |                    |                  |                        |                                                 |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                        | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                        |            |
| 1       | 75      | 9.61  | 9.80  | .19                 |                     | 9.14             | Casing                 | Hole is spudded on an outcrop/subcrop of fine grained sandstone, apparently dipping shallow to the south-west. These rocks are likely very deeply weathered, necessitating the need for the casing used.<br><br>30' = 9.14 meters; top of casing is 0.47 meters above ground level                                                                                                     |            |
| 1       |         | 9.80  | 10.24 | .44                 |                     |                  | Sandstone              | lower fine to very fine grain size, medium gray color with dark carbonaceous laminae throughout, tiny mica flecks on bedding, also pyrite on bedding surfaces associated with carbonaceous laminae, core has a slightly calcareous reaction to 10% HCL - more so on vertically aligned fracture faces lined with a trace of calcite, broken at top, iron stained fracture zone at base |            |
| 1       |         | 10.24 | 10.48 | .24                 |                     |                  | Mudstone               | silty, medium dark gray, uppermost 15 cm is equally interlaminated sandstone/mudstone, from 5 to 12 cm above bottom is a hard concretion band, slightly weathered pale brown gray on the core face - contains a number of calcite filled tension fractures at low angle to core axis, numerous polished surfaces.                                                                      |            |
| 1       |         | 10.48 | 10.82 | .34                 |                     |                  | Mudstone               | medium gray, carbonaceous with numerous plant fragments and thin coaly stringers at top, occasional polished surface, crumbly in platy pieces (rather than "crackly" fracture)                                                                                                                                                                                                         |            |
| 1       |         | 10.82 | 11.03 | .21                 |                     |                  | Sandstone              | medium light gray, very fine grained, micaceous, carbonaceous, hard, non calcareous, numerous tiny calcite lined fractures, numerous plant fragments/ roots                                                                                                                                                                                                                            |            |
| 1       |         |       |       |                     |                     |                  | Mudstone               | medium gray, carbonaceous plant fragments and roots, silty                                                                                                                                                                                                                                                                                                                             |            |

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| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                              | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                              |            |
| 1       |         | 11.03 | 11.26 | .23                |                    |                  | Mudstone               | medium dark gray, carbonaceous with carbonaceous plant fragments and thin coaly stringers, broken throughout, the core surface of the bottom half has deteriorated (perhaps by washing out muddy, coaly and polished pieces), numerous small polished surfaces throughout                                                                                    |            |
| 1       | 80      | 11.26 | 11.94 | .68                |                    | 11.28            | Mudstone               | as above, upper 25 cm is broken and has deteriorated core surface, lower section is stick core with numerous tiny silt and sandstone interbeds and is less carbonaceous                                                                                                                                                                                      |            |
| 2       |         | 11.24 | 13.47 | 1.53               |                    |                  | Mudstone               | silty, medium gray color, very rare carbonaceous plant fragments, tiny silty and sandy interbeds throughout, occasional polished and/or slickensided surfaces good stick core but for uppermost broken 50 cm, sandiest and siltiest towards base, 5 cm. concretion band - 20 cm. from top with calcite stringers, very rare wispy calcite in rest of section |            |
| 2       |         | 13.47 | 13.84 | .37                |                    |                  | Sandstone              | to lower fine grained, interlaminated with siltstone and mudstone, occasionally carbonaceous, numerous polished and slickensided surfaces, stick core, convoluted bedding (burrows or root structures) in places - otherwise no right way up structures                                                                                                      |            |
| 2       |         | 13.84 | 13.97 | .13                |                    |                  | Siltstone              | medium gray, with carbonaceous plant fragment on bedding planes, gradational upper contact, lower contact is lost                                                                                                                                                                                                                                            |            |
| 2       |         | 13.97 | 14.17 | .20                |                    |                  | Mudstone               | medium dark gray, carbonaceous and coaly fragments, small concretions with pyrite centers, bottom doesn't fit core below                                                                                                                                                                                                                                     |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                 | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                 |            |
| 2       |         | 14.17 | 14.58 | .41                |                    | 14.32            | Mudstone               | as above with numerous tiny polished surfaces, also occasional thin coaly lenses, outer core surface is partially deteriorated, broken in 5 cm. pieces throughout with possible minor core loss, slightly calcareous reaction to 10% HCL                                        | VIT2 ✓     |
| 3       |         | 14.58 | 16.27 | 1.69               |                    |                  | Mudstone               | as above, numerous thin coaly lenses through middle, broken in 5 to 10 cm. pieces                                                                                                                                                                                               |            |
| 3       |         | 16.27 | 16.40 | .13                |                    |                  | Coaly Mudstone         | with bright bands up to 1 cm. thick, broken at base                                                                                                                                                                                                                             |            |
| 3       |         | 16.40 | 16.72 | .32                |                    |                  | Mudstone               | coaly, dark gray, bottom half is completely sheared and broken - is very coaly and reacts moderately to 10% HCL, likely core lost                                                                                                                                               |            |
| 3       |         | 16.72 | 16.88 | .16                |                    |                  | Mudstone               | medium gray, rarely carbonaceous, small slickensided and/or polished surfaces at all angles throughout                                                                                                                                                                          |            |
| 3       |         | 16.88 | 17.07 | .19                |                    | 17.37            | Mudstone               | as above                                                                                                                                                                                                                                                                        |            |
| 4       |         | 17.07 | 18.00 | .93                |                    |                  | Mudstone               | as above with common carbonaceous plant fragments, silty towards base, sudden-irregular contact with unit below, broken in 5 to 20 cm. pieces                                                                                                                                   |            |
| 4       |         | 18.00 | 19.28 | 1.28               |                    |                  | Sandstone              | light to medium light gray, very fine to lower fine grained, non carbonaceous, mottled laminae near base - otherwise no sedimentary structures, well indurated, calcareous reaction to HCL, sharp-irregular basal contact, calcite and iron stained vertical fracture in middle |            |
| 4       |         | 19.28 | 19.69 | .41                |                    |                  | Siltstone              | medium gray/brownish gray color, mottled, sharp basal contact, good stick core                                                                                                                                                                                                  |            |
| 4       |         | 19.69 | 19.76 | .07                |                    |                  | Sandstone              | medium light gray; very hard, lower fine grained, calcareous, mottled, calcite lined and iron stained vertical and irregular fractures                                                                                                                                          |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                         |            |
| 5       |         | 19.76 | 19.87 | 0.11               |                    | 20.42            | Sandstone              | as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |
| 5       | 75      | 19.87 | 22.40 | 2.53               |                    |                  | Sandstone              | as above with 20 cm. mudstone interbed at top and thin-fine grained interbeds throughout middle and bottom, 2 cm. broken zone in middle, laminations and small scale-high angle cross beds in lower-half, right way up by crossbed truncations and trough structures                                                                                                                                                                                                    |            |
| 6       |         | 22.40 | 22.88 | .48                |                    |                  | Sandstone              | as above, broken in 20 cm. pieces                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |
| 6       |         | 22.88 | 25.10 | 2.22               |                    | 23.47            | Sandstone              | as above, thin siltstone interbeds                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |
| 7       |         | 25.10 | 25.98 | .88                |                    |                  | Sandstone              | as above, upper fine grain size at bottom, muddy/silty at top, stick core                                                                                                                                                                                                                                                                                                                                                                                               |            |
| 7       |         | 25.98 | 26.88 | .90                |                    | 26.52            | Sandstone              | as above, irregularly interbedded with dark micaceous siltstone in thin convoluted and distorted beds, sands and silts often occur as irregular lenses or intraclast zones and/or with flame and dewatering structures - in places due to bioturbation but mor generally to slumping and soft sediment deformation as well as dewatering and erosional mechanisms, iron stained fractures occur at low angle to core axis, good stock core except broken zone in middle |            |
|         |         | 26.88 | 27.19 | .31                |                    |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |
| 7       |         | 27.19 | 27.77 | .58                |                    | 27.74            | Sandstone              | as directly above                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |
| 8       | 70      | 27.77 | 29.22 | 1.45               |                    |                  | Sandstone              | as directly above                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |
|         | 85      |       |       |                    |                    |                  |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |
| 8       | 80      | 29.22 | 30.33 | 1.11               |                    | 29.56            | Sandstone              | as directly above                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |



| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                        | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                        |            |
| 9       | 80      | 30.33 | 31.41 | 1.08                |                     |                  | Sandstone              | interlaminated and interbedded in up to 20 cm. beds, slightly carbonaceous, micaceous, grain size to lower fine grained, convoluted bedding, soft sediment deformation structures, occasional iron stained fractures at low angle to core axis, broken in large pieces, occasional pyritic concretion                                                                                                  |            |
| 9       | 85      | 31.41 | 32.18 | .77                 |                     |                  | Sandstone              | very light gray, fine grained, faintly medium bedded, 95% white quartz grains - 5% dark lithic grains, sharp contacts on 0.5 cm. mudstone band 30 cm. from base, reacts vigorously with HCL, stick core                                                                                                                                                                                                |            |
| 9       |         | 32.18 | 32.23 | .05                 |                     |                  | Sandstone              | very coarse grained to 3 mm size, average grain size 1 mm., poorly sorted, grains are sub-rounded to rounded, composition: 80% light and dark chert grains, 10% white quartzite grains, 10% irregular-angular mudstone intraclasts - sharp basal contact                                                                                                                                               |            |
| 9       |         | 32.23 | 32.25 | .02                 |                     |                  | Mudstone               | medium dark gray with very thin sandy parallel interlaminations, upper contact shows imprints of grains of the unit above, micaceous                                                                                                                                                                                                                                                                   |            |
| 9       |         | 32.25 | 32.27 | .05                 |                     | 32.61            | Mudstone               | as above, one piece                                                                                                                                                                                                                                                                                                                                                                                    |            |
| 9       |         | 32.27 | 32.97 | .70                 |                     |                  | Sandstone              | very coarse grained, as above sandstone, occasional mudstone intraclasts of 10 X 30 mm., slightly reactive to HCL, calcite lined and iron stained fractures irregularly at low angle to core axis, dark polished surface in middle associated with thin muddy lenses, roughly 50/50 dark and light grains, medium light gray color overall, broken in middle/stick core, intergrain porosity in places |            |
| 10      |         | 32.97 | 33.21 | .24                 |                     |                  | Sandstone              | very coarse grained as above, progressively larger grains as unit grades to the conglomerate below, pebble to 1 cm. size, average 2 - 3 mm size, stick core                                                                                                                                                                                                                                            |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 10      |         | 33.21 | 33.85 | .64                 |                     |                  | Congolmerate           | poorly sorted matrix supported subrounded pebble conglomerate with pebbles up to 2 cm. maximum, pebbly horizons average grain size 4 - 10 mm - matrix 1 - 2 mm., pebbly horizons have good intergrain porosity - often iron stained, most pebbles are light and dark chert though a few are sandy and few others are quartzite, matrix minimum grain size is coarse grained, generally breaks around grains, although old, iron stained fractures break <u>across</u> pebble grains, bottom contact is lost, upper contact gradational to above |            |
| 10      |         | 33.85 | 34.14 | .29                 |                     |                  | Mudstone               | dark gray, carbonaceous, with carbonaceous and coaly plant fragments throughout, bright coal stringers .5 to 1.0 cm. thick near top and bottom, occasional polished surface at low angle to bedding                                                                                                                                                                                                                                                                                                                                             |            |
| 10      |         | 34.14 | 34.49 | .35                 |                     |                  | Coaly Mudstone         | coaly throughout and bands up to centimeter thickness, good stick but broken in places near base                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |
| 10      |         | 34.49 | 34.85 | .36                 |                     |                  | Mudstone               | very coaly with bright bands to 1 cm. thick, broken on coaly bedding surfaces but good stick core, occasional polished surfaces                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 10      |         | 34.85 | 35.05 | .20                 |                     |                  | Mudstone               | coaly with numerous bright bands throughout, numerous polished surfaces, broken                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 10      |         | 35.05 | 35.26 | .21                 |                     |                  | Mudstone               | coaly as above, broken in middle and at bottom - likely core loss                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |
|         |         | 35.26 | 35.91 | .65                 |                     |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
|         |         | 35.91 | 36.78 | .87                 |                     |                  | Lost Coal              | within 1.52 m. unit with lost core above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |            |
| 11      |         | 36.78 | 37.69 | .91                 |                     | 37.18            | Sandstone              | muddy throughout - especially upper 20 cm. and in middle - silty at bottom, up to lower fine grain size, carbonaceous, mottled throughout - churned appearance, thin coaly stringers in middle                                                                                                                                                                                                                                                                                                                                                  |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                  | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                  |            |
| 11      |         | 37.69 | 38.13 | .44                |                    |                  | Siltstone               | and very fine grained sand, muddy and mottled throughout, few polished surfaces                                                                                                                                                                  |            |
| 11      |         | 38.13 | 39.06 | .93                |                    | 38.71            | Mudstone                | silty at top, carbonaceous and coaly below with numerous coaly stringers and lenses up to 2 or 3 mm. thick, broken in 2 to 10 cm. pieces throughout, numerous mirror polish surfaces                                                             |            |
| 12      |         | 39.06 | 39.18 | .12                |                    |                  | Mudstone                | carbonaceous, few coal stringers, many irregular polished surfaces, broken, powdered in middle                                                                                                                                                   |            |
| 12      |         | 39.18 | 39.58 | .40                |                    | 40.23            | Mudstone                | slightly carbonaceous, many polished surfaces irregularly oriented, (soft "crackly" fracture) deteriorated core surface, broken throughout                                                                                                       |            |
|         |         | 39.58 | 41.04 | 1.46               |                    |                  | Lost Core               | including 0.18 meters of coal                                                                                                                                                                                                                    |            |
| 12      |         | 41.04 | 41.40 | .36                |                    |                  | Mudstone                | coaly with numerous stringers of bright coal to 1 cm. thick, usually close to 2 mm. thick, numerous polished surfaces roughly 45° to core axis, broken in 1 to 5 cm. pieces, likely some core lose, silty at base                                |            |
| 12      | 65      | 41.40 | 42.74 | 1.34               |                    | 41.76            | Siltstone               | mottled throughout, muddy top half, sandy lower half, broken at top                                                                                                                                                                              |            |
| 13      | 57      | 42.74 | 43.77 | 1.03               |                    |                  | Siltstone/<br>Sandstone | thinly interbedded, also interlaminated, mottled/bioturbated in places, good examples of cross bedding and laminations in places, excellent examples of right way up, high angle, very thin cross bedding, numerous carbonaceous plant fragments |            |
| 13      | 50      | 43.77 | 45.10 | 1.33               |                    | 44.19            | Siltstone/<br>Sandstone | as above                                                                                                                                                                                                                                         |            |
| 14      | 55      | 45.10 | 46.90 | 1.80               |                    |                  | Siltstone/<br>Sandstone | as above, most of section is mottled, broken in middle                                                                                                                                                                                           |            |

| Box No. | BCA (°)        | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                              | Sample No. |
|---------|----------------|-------|-------|---------------------|---------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From  | To    |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                              |            |
| 14      | 56<br>60       | 46.90 | 47.55 | .65                 |                     | 47.55            | Siltstone/<br>Sandstone | as above, broken zone with wispy calcite filled fracture 27 cm. up from base                                                                                                                                                                                                 |            |
| 15      | 48             | 47.55 | 49.84 | 2.29                |                     |                  | Sandstone               | with minor siltstone interbeds, cross laminated in places, mottled in places, correct upwards orientation, grain size is lower fine grained and very fine grained, occasional carbonaceous laminae, occasional polished surfaces with wispy calcitic zones, broken at bottom |            |
| 15      |                | 49.84 | 50.03 | .19                 |                     | 50.59            | Sandstone               | as above                                                                                                                                                                                                                                                                     |            |
| 16      | 40<br>35<br>35 | 50.03 | 52.62 | 2.59                |                     |                  | Sandstone               | as above, large "vertical" burrows, numerous wispy calcite zones, usually parallel to bedding but occasionally normal to bedding, good stick core broken in large pieces                                                                                                     |            |
| 17      |                | 52.62 | 52.69 | .07                 |                     | 53.64            | Sandstone               | as above                                                                                                                                                                                                                                                                     |            |
| 17      | 35             | 52.69 | 53.38 | .69                 |                     |                  | Sandstone/<br>Siltstone | muddy and thinly interbedded, very muddy at base, grain size up to lower fine grained, convolutely laminated and mottled in places, bottom 20 cm. very broken                                                                                                                |            |
| 17      |                | 53.38 | 53.50 | .12                 |                     |                  | Mudstone                | silty, medium dark gray, carbonaceous and coaly laminae, polished surfaces throughout on bedding planes                                                                                                                                                                      |            |
| 17      |                | 53.50 | 53.70 | .20                 |                     |                  | Mudstone                | coaly, polished shear faces throughout, coaly zone is sheared to powder                                                                                                                                                                                                      |            |
|         |                | 53.70 | 53.78 | .08                 |                     |                  | Lost Core               |                                                                                                                                                                                                                                                                              |            |
| 17      |                | 53.78 | 54.00 | .22                 |                     |                  | Mudstone                | carbonaceous, with rare thin coal stringers and plant fragments, very broken bottom half                                                                                                                                                                                     | VIT4 ✓     |
| 17      |                | 54.00 | 54.34 | .34                 |                     | 54.56            | Mudstone                | as above                                                                                                                                                                                                                                                                     |            |

| Box No. | BCA (°)        | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                        | Sample No. |
|---------|----------------|-------|-------|---------------------|---------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From  | To    |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                        |            |
| 17      | 45             | 54.34 | 55.01 | .67                 |                     |                  | Siltstone               | muddy and/or sandy in places throughout, disseminated pyrite concretions in middle, good stick core                                                                                                                                    |            |
| 18      |                | 55.01 | 56.23 | 1.22                |                     |                  | Siltstone               | argillaceous throughout, occasionally sandy laminae, pyritic concretions at bottom and 35 cm. up from bottom, zoned broken pieces, powder-slickensided surfaces and calcite wisps in middle, numerous tiny calcite filled .25 mm thick |            |
| 18      | 45             | 56.23 | 57.38 | 1.15                |                     | 56.99            | Siltstone               | as above, concretion 30 cm down from top, 25 cm from top is a 1 cm band of 0.5 mm thick calcite-filled burrow trails/tubes tublets giving white speck appearance in upper half                                                         |            |
| 19      | 50             | 57.38 | 59.04 | 1.66                |                     |                  | Siltstone               | as above, occasional thin wispy calcite zones parallel to bedding - associated with polished surfaces and slickensided surfaces, good stick core                                                                                       |            |
| 19      | 50             | 59.04 | 59.91 | .87                 |                     | 60.04            | Siltstone               | as above, arenaceous towards the bottom, rare tiny coaly stringers, good stick core, calcite wisp zones and polished faces                                                                                                             |            |
| 20      | 40             | 59.91 | 62.15 | 2.24                | 2.24                |                  | Siltstone/<br>Sandstone | thinly interbed up to very fine grain sandstone, mottled/burrowed in places - cross laminated in places, muddy/argillaceous in places                                                                                                  |            |
| 20      |                | 62.15 | 62.70 | .55                 |                     | 63.09            | Siltstone/<br>Sandstone | muddy/argillaceous throughout, otherwise as above                                                                                                                                                                                      |            |
| 21      |                | 62.70 | 65.22 | 2.52                |                     |                  | Siltstone/<br>Sandstone | as above, argillaceous                                                                                                                                                                                                                 |            |
| 21      |                | 65.22 | 65.28 | .06                 |                     | 66.14            | Siltstone/<br>Sandstone | as above                                                                                                                                                                                                                               |            |
| 22      | 40<br>30<br>35 | 65.28 | 67.73 | 2.45                |                     |                  | Siltstone/<br>Sandstone | very argillaceous, occasional "vertical" burrows, occasional calcite lined slickensided surface parallel to bedding, broken in middle but little apparent core loss                                                                    |            |

| Box No. | BCA (°)  | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m)        | LITHOLOGIC DESCRIPTION                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                          | Sample No. |
|---------|----------|-------|-------|--------------------|--------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To    |                    |                    |                         | MAIN                                                                                                                                                                                                                             | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                          |            |
| 23      | 35       | 67.73 | 68.13 | .40                |                    |                         | Sandstone                                                                                                                                                                                                                        | very fine grained, argillaceous laminae and cross laminations - correct upward orientation relative to original sedimentation, small concretions in upper half, numerous calcite lined fractures both parallel and perpendicular to bedding, occasional centimeter size open fractures lined with calcite crystals - largest one at bottom, broken stick | VIT 5 ✓    |
| 23      | 38<br>43 | 68.13 | 70.39 | 2.26               | 69.19              | Siltstone/<br>Sandstone | argillaceous, mottled in places, laminated and cross laminated, soft sediment load structures - small scale erosional features, mostly argillaceous/muddy siltstone through bottom half                                          |                                                                                                                                                                                                                                                                                                                                                          |            |
| 24      |          | 70.39 | 71.19 | .80                |                    | Siltstone               | muddy throughout, carbonaceous plant remains increase towards bottom, numerous at base                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                          |            |
|         |          | 71.19 | 71.80 | .61                |                    | Lost Core               |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                          |            |
| 24      |          | 71.80 | 73.60 | 1.80               |                    | Mudstone                | silty at top, medium dark gray, carbonaceous with plant fragments, numerous dark polished surfaces throughout, occasional coaly stringers. (Vit. #5 1.1 m from bottom) broken in places, occasional calcite wisps through middle |                                                                                                                                                                                                                                                                                                                                                          |            |
|         |          | 73.60 | 73.78 | .18                |                    | Lost Core               |                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                          |            |
| 25      | 40<br>30 | 73.78 | 74.77 | .99                |                    | Siltstone/<br>Sandstone | as before                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                          |            |
| 25      | 30<br>35 | 74.77 | 76.14 | 1.37               | 75.28              | Siltstone/<br>Sandstone | as above, lower 25 cm is very argillaceous with very minor silt and sandstone interlaminations, each sandstone interbed has a sharp lower contact to argillaceous siltstone                                                      |                                                                                                                                                                                                                                                                                                                                                          |            |
| 25      | 40       | 76.14 | 76.35 | .21                |                    | Mudstone                | silty, medium grey, minor silty interlaminations                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                          |            |
| 26      |          | 76.35 | 77.72 | 1.37               |                    | Mudstone                | medium gray, silty throughout, blocky/crackly fracture, stick core                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                          |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                   | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                   |            |
| 26      |         | 77.72 | 79.05 | 1.33                |                     | 78.33            | Mudstone               | silty interbeds in places, sandy interlaminae 30 cm. from top, concretions 40 cm. from top and 20 cm. from bottom, tiny carbonaceous fragments lined with calcite and numerous tiny polished surfaces, stick core |            |
| 27      |         | 79.05 | 79.18 | .13                 |                     |                  | Mudstone               | as above with numerous coal stringers, broken, polished surfaces throughout                                                                                                                                       |            |
| 27      |         | 79.18 | 79.38 | .20                 | .15                 |                  | Coal                   | lustrous and bright, sheared throughout and broken in pieces, numerous mudstone fragments throughout, also sheared, cannot tell original coal/mudstone relationship                                               | VIT 6 ✓    |
| 27      |         | 79.38 | 79.48 | .10                 | .08                 |                  | Coal                   | dull and bright powder and tiny fragments                                                                                                                                                                         | BULK MAC   |
|         |         | 79.48 | 80.25 | .77                 | .59                 |                  | Lost Coal Sample       | 83-20 <u>Seam 1</u> 79.18 - 80.25 meters, 0-82 m. true thickness                                                                                                                                                  | ✓          |
| 27      |         | 80.25 | 80.29 | .04                 |                     |                  | Mudstone               | medium dark gray, carbonaceous plant fragments throughout                                                                                                                                                         |            |
| 27      | 60      | 80.29 | 81.06 | .77                 |                     |                  | Sandstone              | very carbonaceous with abundant coaly plant fragments, medium gray color with dark laminae, lower fine grain size                                                                                                 |            |
| 27      |         | 81.06 | 81.15 | .09                 |                     | 81.38            | Sandstone              | as above, sharp basal contact                                                                                                                                                                                     |            |
| 27      |         | 81.15 | 81.90 | .75                 |                     |                  | Siltstone              | medium gray, dull sheen, occasional plant fragments, calcite lined fractures parallel and perpendicular to bedding, and parallel to core axis                                                                     |            |
| 27      |         | 81.90 | 81.99 | .09                 |                     |                  | Siltstone              | with approximately 10% coal powder, broken in small pieces, as above                                                                                                                                              |            |
|         |         | 81.99 | 82.84 | .85                 |                     |                  | Lost Core              |                                                                                                                                                                                                                   |            |
| 27      |         | 82.84 | 83.00 | .16                 |                     |                  | Siltstone              | as above, one piece of core                                                                                                                                                                                       |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                   | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                   |            |
| 28      | 45      | 83.00 | 83.89 | .89                |                    |                  | Siltstone              | medium light gray, rare carbonaceous fragments, numerous very fine grain sandstone interlamination and occasional sand filled tubes/burrows, occasional irregular pyritic modules |            |
| 28      |         | 83.89 | 84.77 | 0.88               |                    | 84.12            | Siltstone              | as above, grades to unit below                                                                                                                                                    |            |
| 28      |         | 84.77 | 85.15 | .38                |                    |                  | Mudstone               | medium gray, slightly carbonaceous, shear planes throughout, broken                                                                                                               |            |
| 28      | 40      | 85.15 | 85.57 | .42                |                    |                  | Sandstone              | interlaminated very fine and lower fine grained sizes, occasional carbonaceous plant fragments, calcite lined fractures                                                           |            |
| 29      | 25      | 85.57 | 86.87 | 1.30               |                    |                  | Sandstone              | as above, 20 cm. crossbeds, correct upward orientation, 4 cm. of broken mudstone at 5 cm. from base                                                                               |            |
|         | 28      | 86.87 | 87.50 | .63                |                    |                  | Lost Core              |                                                                                                                                                                                   |            |
| 29      |         | 87.50 | 88.10 | .60                |                    | 87.17            | Sandstone              | as above, broken and ground in upper half, mudstone interbed near base, plant fragments and intraclasts of mudstone near base, basal contact is sharp to mudstone                 |            |
| 29      |         | 88.10 | 88.77 | .67                |                    |                  | Mudstone               | medium gray, slightly carbonaceous, abundant small (1 mm to 2 cm) bivalve fossils throughout, concretion 25 cm from bottom                                                        |            |
| 30      |         | 88.77 | 90.09 | 1.32               |                    |                  | Mudstone               | medium gray, mottled, very rare plant fragments or fossils, few polished surfaces at medium angle to core axis, broken in middle                                                  |            |
|         |         | 90.09 | 90.30 | .21                |                    | 90.52            | Mudstone               | as above                                                                                                                                                                          |            |



| Box No. | BCA (°)  | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                              | Sample No. |
|---------|----------|-------|-------|--------------------|--------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From  | To    |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                              |            |
| 30      | 15       | 90.30 | 91.41 | 1.11               |                    |                  | Sandstone               | lower fine grained, medium light gray with dark argillaceous laminae, bioturbated and churned, very mottled to medium dark gray in places, grades upwards to the mudstone above, laminations are irregular and convolute at low angle to core axis, (occasional calcite stringers perpendicular to bedding?) |            |
| 31      |          | 91.41 | 91.64 | .23                |                    |                  | Sandstone               | as above                                                                                                                                                                                                                                                                                                     |            |
| 31      |          | 91.64 | 93.04 | 1.4                |                    |                  | Siltstone               | medium gray, non carbonaceous, very argillaceous/muddy throughout, mottled throughout, broken in middle                                                                                                                                                                                                      |            |
|         |          | 93.04 | 93.21 | .17                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                                                                              |            |
| 31      |          | 93.21 | 94.21 | 1.0                |                    | 93.57            | Mudstone                | medium gray, silty towards top and bottom, occasional carbonaceous plant fragments (most are linear 2 X 10 mm sized within fine lengthwise striations), broken near top in zone of polished surfaces                                                                                                         |            |
| 32      | 50<br>50 | 94.21 | 96.19 | 1.98               |                    |                  | Siltstone/<br>Sandstone | argillaceous/muddy siltstone with thin interbeds of fine and very fine sandstone, laminated, mottled, burrowed/sand filled tubes - in places, muddy at top (BCA's steepen)                                                                                                                                   |            |
| 32      |          | 96.19 | 96.25 | .06                |                    | 96.62            | Siltstone/<br>Sandstone | as above                                                                                                                                                                                                                                                                                                     |            |
| 32      |          | 96.25 | 96.89 | .64                |                    |                  | Mudstone                | medium gray as in second unit above with rare poorly preserved bivalve shells                                                                                                                                                                                                                                |            |
| 33      |          | 96.89 | 97.10 | .21                |                    |                  | Mudstone                | as above, basal contact lost                                                                                                                                                                                                                                                                                 |            |
|         |          | 97.10 | 97.75 | .65                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                                                                              |            |
| 33      | 45       | 97.75 | 97.93 | .18                |                    |                  | Sandstone               | muddy, very fine grained, mottled, carbonaceous plant fragments                                                                                                                                                                                                                                              |            |

| Box No. | BCA (°)        | Depth  |         | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                | Sample No.     |
|---------|----------------|--------|---------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|         |                | From   | To      |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                |                |
| 33      | 45<br>40<br>35 | 97.93  | - 99.68 | 1.75               |                    | 97.84            | Sandstone              | argillaceous, carbonaceous, medium light gray, lower fine grained, mottled except at bottom, vigorous reaction to HGL, broken but likely core loss, numerous calcite lined planar fractures                                                                                                                                                    |                |
| 33      |                | 99.68  | - 99.92 | .24                |                    | 99.66            | Sandstone              | as above                                                                                                                                                                                                                                                                                                                                       |                |
| 34      |                | 99.92  | -102.61 | 2.69               |                    |                  | Sandstone              | as above with thin argillaceous interbeds, cross laminated except where very mottled, 1 cm. thick calcite filled fractures 55 - 75 and 205 cm. from top, BCA's drop to near 0° at 65 cm. from top - then rapidly climb to 25° at 85 cm. to 55° near bottom, right way up at bottom, broken in middle, lower fine grained to very fine grained. |                |
| 35      | 45             | 102.61 | -105.31 | 2.70               |                    | 102.71           | Sandstone              | as above, good stick core, calcite filled fracture 20 cm. from top, occasional other thin calcite lined fractures                                                                                                                                                                                                                              |                |
| 36      |                | 105.31 | -105.59 | .28                |                    |                  | Sandstone              | as above                                                                                                                                                                                                                                                                                                                                       |                |
| 36      | 45             | 105.59 | -107.71 | 2.12               |                    | 105.76           | Sandstone              | as above, numerous dark polished planar bedding surfaces and slickensides                                                                                                                                                                                                                                                                      |                |
| 37      | 50             | 107.71 | -110.50 | 2.79               |                    | 108.2            | Sandstone/<br>Mudstone | interbedded, up to lower fine grain size, laminated in places, mottled elsewhere, numerous wispy calcite stringers parallel to bedding in lower half                                                                                                                                                                                           |                |
| 38      |                | 110.50 | -110.75 | .25                |                    |                  | Sandstone/<br>Mudstone | as above, right way up truncated cross laminations                                                                                                                                                                                                                                                                                             |                |
| 38      | 50             | 110.75 | -111.97 | 1.22               |                    | 111.2            | Sandstone/<br>Mudstone | as above, occasional calcite lined fractures perpendicular to bedding, bottom 4 cm. has numerous calcite stringers                                                                                                                                                                                                                             |                |
| 38      |                | 111.97 | -112.00 | .03                |                    |                  | Coal                   | dull and bright, calcite and pyrite mineralization between coal bands and irregular nodules broken into small pieces                                                                                                                                                                                                                           | VIT 7<br>"C" ✓ |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                   | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                   |            |
| 38      |         | 112.00 | 112.08 | .08                |                    |                  | Coal                   | bright and dull powder                                                                                                            |            |
| 38      |         | 112.08 | 112.46 | .38                |                    | 112.4            | Mudstone               | carbonaceous and coaly, numerous polished shear planes, broken at top                                                             |            |
| 38      |         | 112.46 | 112.83 | .37                |                    |                  | Coaly Mudstone         | with muddy coal bands to 5 cm. thick, 0.5 cm. thick bright coal bands, sheared in places, broken, less coaly at bottom            |            |
| 39      |         | 112.83 | 113.65 | .82                |                    | 113.4            | Mudstone               | dark gray, carbonaceous with thin coaly stringers, broken at top, small polished surfaces throughout, broken but little core loss |            |
| 39      | 60      | 113.65 | 114.17 | .52                |                    |                  | Sandstone              | fine grained, muddy laminations, occasional coaly fragments and wispy calcite zones                                               |            |
| 39      | 55      | 114.17 | 115.08 | .91                |                    | 114.9            | Sandstone              | as above, grades to mudstone over bottom 20 cm.                                                                                   |            |
| 39      |         | 115.08 | 115.12 | .04                |                    |                  | Coal                   | dull and bright powder and small pieces                                                                                           |            |
| 39      |         | 155.12 | 115.16 | .04                |                    |                  | Mudstone               | dark gray, carbonaceous, coaly                                                                                                    |            |
| 40      |         | 115.16 | 115.18 | .02                |                    |                  | Coal                   | powdered, dull and bright fragments                                                                                               |            |
|         |         | 115.18 | 115.94 | .76                |                    |                  | Lost Core              |                                                                                                                                   |            |
| 40      |         | 115.94 | 116.16 | .22                |                    |                  | Mudstone               | carbonaceous and coaly, very coaly at base                                                                                        |            |
| 40      |         | 116.16 | 116.24 | .08                |                    |                  | Coal                   | dull with bright bands, hard, crispy, square planar fracture (as opposed to good cleat) with good cleat in bright bands, broken   |            |
|         |         | 116.24 | 116.36 | .12                |                    |                  | Lost Coal              |                                                                                                                                   |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION      |                                                                                                                                                                                                                                                         | Sample No.  |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|         |         | From   | To     |                    |                    |                  | MAIN                        | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                         |             |
| 51      |         | 141.93 | 143.34 | 1.41               |                    |                  | Mudstone                    | dark grey, carbonaceous, but not as carbonaceous as previous, coal stringers only at base with contact of coal                                                                                                                                          | Bulk Mac. ✓ |
| 51      |         | 143.34 | 143.37 | .03                |                    |                  | Coal                        | powder and pieces of dull sheared coal with carbonaceous mudstone                                                                                                                                                                                       |             |
| 51      |         | 143.37 | 143.50 | .13                |                    |                  | Coal                        | dull, badly sheared, pieces are slivered, very broken and sheared                                                                                                                                                                                       |             |
| 51      |         | 143.50 | 143.63 | .13                |                    |                  | Coal                        | dull lustrous, broken, powder and pieces at base, sheared                                                                                                                                                                                               |             |
|         |         | 143.63 | 143.68 | .05                |                    |                  | <u>Lost Coal Sample</u>     | <u>sample 1, ply 1, 143.34-143.68 meter interval</u>                                                                                                                                                                                                    |             |
| 51      |         | 143.68 | 143.77 | .09                |                    |                  | Coaly Mudstone              | bright coal stringers, broken, sheared                                                                                                                                                                                                                  |             |
| 51      |         | 143.77 | 143.98 | .21                |                    |                  | Mudstone                    | powder and pieces, stick core at base, highly polished, sheared, broken pieces are slivered, carbonaceous, dark grey                                                                                                                                    |             |
| 52      |         | 143.98 | 144.08 | .10                |                    |                  | Mudstone and Coaly Mudstone | powder and pieces, sheared and polished mudstone pieces (.05 m), powder coaly mudstone and coal (for 0.5 m), highly sheared, falls apart when touched, but can see shearing across tiny pieces which are stuck together to form a soft lump of mudstone |             |

| Box No. | BCA (°)        | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                               | Sample No. |
|---------|----------------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                               |            |
|         | 50             | 119.92 | 119.94 | .02                 |                     |                  | Coal                   | powder, dull and bright fragments                                                                                                                                                                                                                             |            |
|         |                | 119.94 | 119.99 | .05                 |                     |                  | Lost Coal              |                                                                                                                                                                                                                                                               |            |
|         |                | 119.99 | 120.76 | .77                 |                     |                  | Sandstone              | with dark argillaceous interbeds and interlamination, very fine to lower fine grained, sharp contact at base, carbonaceous plant fragments on bedding surfaces and broad leaf-like prints with linear striations (fragments 2 cm. across crossing core width) |            |
| 41      | 45             | 120.76 | 121.38 | .62                 |                     | 121.0            | Sandstone              | as above                                                                                                                                                                                                                                                      |            |
| 42      |                | 121.38 | 121.60 | .22                 |                     |                  | Mudstone               | carbonaceous and coaly with two 2 cm. thick coal bands at top, broken at top as well                                                                                                                                                                          |            |
|         |                | 121.60 | 121.84 | .24                 |                     |                  | Lost Coal              |                                                                                                                                                                                                                                                               |            |
|         |                | 121.84 | 123.69 | 1.85                |                     |                  | Sandstone              | lower fine grained, medium light gray, relatively soft for a sandstone - much like the silty ash bed found above in box 40 but non-calcarous, no sedimentary structures, occasional calcite lined fractures                                                   |            |
|         |                | 123.69 | 123.82 | .13                 |                     | 124.0            | Sandstone              | as above                                                                                                                                                                                                                                                      |            |
| 42      |                | 123.82 | 124.12 | .30                 |                     |                  | Sandstone              | lower fine and very fine grained, argillaceous in places, occasional coaly stringers, reacts vigorously with HCL                                                                                                                                              |            |
| 43      | 45<br>55<br>50 | 124.12 | 126.68 | 2.56                |                     |                  | Sandstone              | as above, cross laminated in places, mottled in places, ground in one place near top - otherwise good stick core                                                                                                                                              |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                   | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                   |            |
| 44      | 45      | 126.68-129.24 |    | 2.56               |                    | 127.1            | Sandstone              | becoming more argillaceous throughout until muddy and silty at bottom, broken in 5 to 20 cm. pieces                                                                                                                                                               |            |
|         |         | 129.24-129.74 |    | .50                |                    |                  | Lost Core              |                                                                                                                                                                                                                                                                   |            |
| 45      |         | 129.74-130.27 |    | .53                |                    |                  | Sandstone              | very argillaceous, bottom 20 cm. is silty mudstone, occasional coaly stringer                                                                                                                                                                                     |            |
|         |         | 130.27-130.41 |    | .14                |                    | 130.1            | Concretion Band        | hard, pyritic, occasional irregular calcite filled fractures (pale brownish gray color)                                                                                                                                                                           |            |
| 45      |         | 130.41-132.43 |    | 2.02               |                    |                  | Siltstone              | muddy, medium gray, homogenous, rare tiny black plant? fragment remains, occasional light gray, rounded nodular features - not continuous enough to be burrows, non calcareous                                                                                    |            |
| 46      |         | 132.43-133.27 |    | .84                |                    |                  | Siltstone              | as above, very carbonaceous at base                                                                                                                                                                                                                               | Vit 10 ✓   |
|         |         | 133.27-134.00 |    | .73                |                    | 133.2            | Mudstone               | carbonaceous and coaly throughout with coal stringers up to 1 cm. thick 20 cm. from base, numerous polished surfaces and wispy calcite zones, broken 20 cm. from base and at base, grades to unit below, non calcareous (Vit #10, 20 cm from base)                |            |
| 46      |         | 134.00-135.06 |    | 1.06               |                    |                  | Fossiliferous Mudstone | light medium gray, very vigorous reaction to HCL, abundant fossils and trace fossils - tiny calcite filled tubelets (originally near horizontal), numerous fragments and shells of bivalves and gastropods, especially towards the bottom - continued in next box | "A"        |

| Box No. | BCA (°)  | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                        | Sample No. |
|---------|----------|--------|--------|---------------------|---------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                        |            |
| 47      |          | 135.06 | 136.14 | 1.08                |                     |                  | Fossiliferous Siltstone | medium gray with shades of pale brown, abundant fossils throughout - most noticeable are those of gastropods - with occasional shells 1.5 cm. across - also are small (3 mm. long) tentaculid-like surfaces, tiny tubelets filled with calcite, very calcareous, muddy |            |
| 47      |          | 136.14 | 136.66 | .52                 |                     | 136.2            | Fossiliferous Siltstone | as above                                                                                                                                                                                                                                                               |            |
| 47      |          | 136.66 | 137.63 | .97                 |                     |                  | Mudstone                | medium gray, silty, tiny "tubelets" scattered throughout, filled with calcite                                                                                                                                                                                          |            |
| 48      | 25<br>30 | 137.63 | 139.18 | 1.55                |                     |                  | Siltstone               | muddy with occasional thin sandstone interbeds, muddy and with tiny tubelets in upper 60 cm.                                                                                                                                                                           |            |
| 48      |          | 139.18 | 140.25 | 1.07                |                     |                  | Siltstone               | as above, very muddy in bottom 50 cm.                                                                                                                                                                                                                                  |            |
| 49      | 25       | 140.25 | 142.12 | 1.87                |                     |                  | Mudstone                | dark medium gray with silty interbeds and silty at top, occasional calcite lined fractures, broken in middle                                                                                                                                                           |            |
| 49      |          | 142.12 | 142.81 | .69                 |                     | 142.3            | Mudstone                | silty, as above                                                                                                                                                                                                                                                        |            |
| 50      | 5        | 142.81 | 144.96 | 2.15                |                     |                  | Siltstone               | and mudstone, muddy, BCA's near vertical, broken in 2 places                                                                                                                                                                                                           |            |
| 50      | 5        | 144.96 | 145.43 | .47                 |                     | 145.4            | Siltstone               | as above                                                                                                                                                                                                                                                               |            |
| 51      | 5<br>0   | 145.43 | 146.73 | 1.30                |                     |                  | Siltstone               | as above, broken at top and throughout bottom half, calcite lined fracture planes and polished surfaces                                                                                                                                                                |            |
| 51      |          | 146.73 | 147.73 | 1.00                |                     | 147.2            | Siltstone               | as above, muddy                                                                                                                                                                                                                                                        |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m)       | LITHOLOGIC DESCRIPTION                                                                                                                                       |                                                 | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                        | MAIN                                                                                                                                                         | Amplified (Include Coal Recovery for Each Seam) |            |
| 52      |         | 147.73-147.92 |    | .19                |                    |                        | Siltstone                                                                                                                                                    | as above, muddy,                                |            |
|         |         | 147.92-149.63 |    | 1.71               | 148.4              | Siltstone              | as above, muddy, broken through middle                                                                                                                       |                                                 |            |
| 52      |         | 149.63-150.09 |    | .46                | 150.2              | Siltstone              | as above, muddy, broken at top                                                                                                                               |                                                 |            |
| 53      | 5       | 150.09-151.00 |    | .91                |                    | Siltstone              | as above, broken in bottom half                                                                                                                              |                                                 |            |
| 53      |         | 151.00-152.16 |    | 1.16               | 152.1              | Siltstone              | as above, broken in middle, very muddy at bottom                                                                                                             |                                                 |            |
|         |         | 152.16-152.18 |    | 1.02               |                    | Lost Core              |                                                                                                                                                              |                                                 |            |
|         |         | 152.16-154.30 |    | 1.12               |                    | Mudstone               | silty in places, occasional irregular - and elongate burrows - filled with pyrite and siderite? bottom is broken into angular pieces and healed with calcite |                                                 |            |
|         |         | 154.30-154.50 |    | .20                |                    | Fossiliferous Mudstone | very calcareous with small fossils and many tiny "tubelet" burrow trails, low gamma response                                                                 |                                                 |            |
| 54      |         | 154.50-155.79 |    | 1.29               | 154.5              | Fossiliferous Mudstone | as above                                                                                                                                                     |                                                 |            |
| 55      |         | 155.79-157.35 |    | 1.56               |                    | Mudstone               | "tubelet" burrows in top half, very calcareous in all but very bottom, carbonaceous fragments, BCA's still very low                                          |                                                 |            |
| 55      |         | 157.35-157.49 |    | .14                |                    | Mudstone               | dark gray, wispy coaly stringers throughout, polished surfaces throughout, very broken at top                                                                |                                                 |            |
| 55      | 45      | 157.49-158.19 |    | .70                | 157.6              | Mudstone               | dark gray, carbonaceous plant fragments                                                                                                                      |                                                 |            |



| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                             | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                             |            |
| 56      |         | 158.19-158.38 |    | .19                |                    |                  | Mudstone               | medium dark gray, mottled, broken                                                                                                                                                                                                                                                                                                           |            |
|         |         | 158.38-158.80 |    | .22                |                    |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                                             |            |
| 56      |         | 158.80-160.70 |    | 1.90               |                    | 158.8            | Siltstone              | medium gray, occasional plant fragments, mottled throughout, argillaceous/muddy                                                                                                                                                                                                                                                             |            |
|         |         | 160.70-161.16 |    | .46                |                    | 160.6            | Siltstone              | as above                                                                                                                                                                                                                                                                                                                                    |            |
| 57      |         | 161.16-163.75 |    | 2.59               |                    |                  | Siltstone              | medium gray, very muddy, mottled                                                                                                                                                                                                                                                                                                            |            |
| 58      |         | 16.75-164.12  |    | .37                |                    | 163.7            | Siltstone              | as above                                                                                                                                                                                                                                                                                                                                    |            |
|         |         | 164.12-165.27 |    | 1.15               |                    |                  | Mudstone               | medium dark gray, carbonaceous, coaly stringers to .5 cm. thick throughout, occasional fine wispy calcite stringers throughout associated with polished surfaces, very broken in bottom 20 cm.                                                                                                                                              |            |
| 58      |         | 165.27-165.87 |    | .60                |                    | 165.5            | Mudstone               | as above, very broken throughout, only occasional coaly stringers                                                                                                                                                                                                                                                                           |            |
|         |         | 165.87-167.38 |    | 1.51               |                    |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                                             |            |
| 59      |         | 167.38-167.87 |    | .49                |                    |                  | Mudstone               | as above, broken throughout                                                                                                                                                                                                                                                                                                                 |            |
|         |         | 167.87-168.20 |    | .33                |                    |                  | Mudstone               | as above, with occasional coaly stringers                                                                                                                                                                                                                                                                                                   |            |
| 59      | 40      | 168.20-169.67 |    | 1.47               |                    |                  | Fossiliferous Mudstone | low gamma type, grades down from medium gray with "tubelet" burrows to light grayish brown with burrow mottling and shell fragments, 20 cm. from bottom is a 15 cm. thick zone of angular rock breccia healed by calcite, displacement is not great, some fragments are rotated and refractured, this rock is soft and very reactive to HCL |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |
| 60      |         | 169.67 | 169-84 | .17                 |                     |                  |                        | as above, dark polished surfaces form laminations (bedding?)                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |
| 60      |         | 169.84 | 172.24 | 2.40                |                     | 169.77           | Fossiliferous Mudstone | as above with varying degrees of mottling - burrowing - fossil content, good sections of gastropods and bivalve shells up to 2 cm. scale, great variety of sizes and shapes of shells cut by core surface, bedding? surfaces appear muddy or crystalline - calcite stringers occur in many places as cm. wide bands and as wispy infilling on tension fracture features, BCA's (if dark laminae are bedding) are between 30 and 60 degrees. Possible Sample - sometimes feels muddy and silty or grainy |            |
| 61      |         | 172.24 | 172.76 | .52                 |                     |                  | Mudstone               | as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |
| 61      |         | 172.76 | 173.77 | 1.01                |                     | 172.81           | Mudstone               | as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |
| 61      | 60      | 173.77 | 174.82 | 1.05                |                     |                  | Sandstone              | very calcareous, coaly stringers and dark laminae in medium gray lower fine grained sandstone occasional intraclasts, bedding (as defined by dark laminae and polished surfaces) is overturned in one fold on one piece of core - no indicators for which way is original depositional orientation, calcite fills and heals zone of angular fragments near top, sandstone surface looks porous                                                                                                          | Vit 12 ✓   |
| 62      | 60      | 174.82 | 175.81 | .99                 |                     |                  | Sandstone              | as above, moderately sharp basal contact                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |
| 62      |         | 175.81 | 176.19 | .38                 |                     | 175.86           | Mudstone               | carbonaceous, dark gray, coal stringers and lenses, noncalcareous, broken and coaly for bottom 5 cm.                                                                                                                                                                                                                                                                                                                                                                                                    |            |
|         |         | 176.19 | 176.46 | .27                 |                     |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                   | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                   |            |
| 62      |         | 176.46 | 177.59 | 1.13                |                     |                  | Fossiliferous Mudstone | silty: gastropod and other shells and shell fragments in lower half, as in fossiliferous units above, good examples of coiled gastropods and linear chambered gastropods up to 1.5 cm. long size - usually smaller (sample bottom 56 cm.)         |            |
| 63      |         | 177.59 | 178.61 | 1.02                |                     |                  | Fossiliferous Mudstone | as above, mottled/burrowed, dark gray bottom 30 cm. with disrupted sandy zones                                                                                                                                                                    |            |
| 63      |         | 178.61 | 178.91 | .30                 |                     |                  | Sandstone              | lower fine grained with argillaceous laminae and thin interbeds, soft sediment deformation and mottling throughout all but near base                                                                                                              |            |
| 63      | 52      | 178.91 | 179.31 | .40                 |                     | 178.91           | Sandstone              | as above but laminations and bedding remain, sharp contacts, burrowing at base and sharp irregular basal contact disrupted with numerous sand filled tubes/burrows into argillaceous unit below                                                   |            |
| 63      |         | 179.31 | 180.37 | 1.06                |                     |                  | Siltstone              | argillaceous, medium gray, occasional very fine sandy laminations, 10 cm. mudstone interbeds towards bottom and at base, 0.5 cm. wide sand filled tubes in upper half                                                                             |            |
| 64      |         | 180.37 | 181.95 | 1.58                |                     |                  | Mudstone               | medium gray, silty at top and bottom, concretionary in middle, non carbonaceous non-calcareous, numerous polished surfaces throughout middle 100 cm. where there is core surface deterioration, broken in pieces 3-10 cm. long except where silty |            |
| 64      |         | 181.95 | 182.74 | .79                 |                     | 181.96           | Mudstone               | silty or sandy in places, mottled, medium dark gray, polished surfaces in lower half                                                                                                                                                              |            |
| 65      |         | 182.74 | 183.33 | .59                 |                     |                  | Mudstone               | as above                                                                                                                                                                                                                                          |            |
|         |         | 183.33 | 183.48 | .15                 |                     |                  | Mudstone               | medium dark gray, carbonaceous with coaly stringers and broken coaly stringers throughout, broken throughout, 1 cm. thick powdered coal in middle                                                                                                 |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                   | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                   |            |
|         |         | 183.48 | 183.63 | .15                 |                     |                  | Lost Core              |                                                                                                                                                                                                                                                                   |            |
|         |         | 183.63 | 184.83 | 1.20                |                     |                  | Siltstone              | muddy and carbonaceous and coaly near top, sandy in middle, calcareous reactions to HCL, numerous fine calcite wisps subparallel to bedding, good stick core                                                                                                      |            |
|         |         | 184.83 | 184.96 | .13                 |                     | 185.0            | Siltstone              | as above                                                                                                                                                                                                                                                          |            |
|         |         | 184.96 | 185.04 | .08                 |                     |                  | Coal                   | dull and lustrous, sheared throughout, bottom half is powdered                                                                                                                                                                                                    |            |
|         |         | 185.04 | 185.13 | .09                 |                     |                  | Lost Core              |                                                                                                                                                                                                                                                                   |            |
| 65      |         | 185.13 | 185.35 | .22                 |                     |                  | Siltstone              | as above                                                                                                                                                                                                                                                          |            |
| 66      | 65      | 185.35 | 187.20 | 1.85                |                     |                  | Sandstone              | medium gray, very fine grained, argillaceous, argillaceous interlamination, calcite stringers (up to 1 cm thick) in middle-perpendicular to bedding, mottled and disrupted bedding in places, very calcareous reaction to HCL, sharp and undulating lower contact |            |
| 66      |         | 187.20 | 187.84 | .64                 |                     |                  | Siltstone              | 15 cm. mudstones at top and in middle, occasional small irregular pointed surfaces, occasional thin coaly stringers, calcareous                                                                                                                                   |            |
| 66      |         | 187.84 | 188.00 | .16                 |                     | 188.05           | Siltstone              | as above, sandy                                                                                                                                                                                                                                                   |            |
| 67      | 60      | 188.00 | 189.53 | 1.53                |                     |                  | Sandstone              | very fine grained, mottled, arenaceous, laminated in places, good stick core                                                                                                                                                                                      |            |
| 67      |         | 189.53 | 190.27 | .74                 |                     | 189.58           | Sandstone              | as above with 2 lower fine grain 5 cm. interbeds, muddy at base, sharp basal contact                                                                                                                                                                              |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                   | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                   |            |
| 67      |         | 190.27-190.64 |    | .37                 |                     |                  | Mudstone               | dark gray, carbonaceous and coaly, occasional wavy polished surface, good stick core, sand filled tube (0.5 cm thick) near base                                                                                   | VIT 14     |
|         |         | 190.64-190.82 |    | .18                 |                     |                  | Lost Core              |                                                                                                                                                                                                                   |            |
| 67      |         | 190.82-190.90 |    | .08                 |                     |                  | Coal                   | dull banded, with thin fusainous stringers, sheared/polished surfaces through-out - good stick core                                                                                                               |            |
| 68      |         | 190.90-190.98 |    | .08                 |                     |                  | Coal                   | as above                                                                                                                                                                                                          |            |
| 68      |         | 190.98-191.02 |    | 0.04                |                     |                  | Mudstone               | silty, very carbonaceous, medium dark gray                                                                                                                                                                        |            |
| 68      |         | 191.02-191.12 |    | 0.10                | 191.10              |                  | Mudstone               | as above, gradational to unit below                                                                                                                                                                               |            |
| 68      | 65°     | 191.12-191.53 |    | .41                 |                     |                  | Sandstone              | very fine grained, laminated, calcareous                                                                                                                                                                          |            |
| 68      |         | 191.53-192.40 |    | .87                 |                     |                  | Mudstone               | dark gray, carbonaceous, thin coaly stringers, sandy and mottled basal 20 cm deteriorated core surface, good core stick                                                                                           |            |
| 68      |         | 192.40-193.61 |    | 1.21                |                     |                  | Sandstone (F type)     | fine grained, light medium gray, very calcareous, easily scratched, non carbonaceous, good stick core                                                                                                             |            |
| 69      |         | 193.61-193.96 |    | .35                 |                     |                  | Sandstone              | as above with faint laminations and occasional vertical sand filled tube/burrows, very calcareous                                                                                                                 |            |
| 69      | 60°     | 193.96-196.20 |    | 2.24                | 194.15              |                  | Sandstone              | as above, muddy with a coal stringer 25 to 55 cm from top, numerous small intraclast zones in bottom half - also to upper fine grain size and rare coaly lenses in bottom half, very calcareous, planar laminated | VIT 15     |
| 69      |         | 196.20-196.30 |    | .10                 |                     |                  | Coal                   | dull, sheared, powdered and broken, few muddy coal pieces                                                                                                                                                         |            |

| Box No. | BCA (°) | Depth         |               | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                        | Sample No. |
|---------|---------|---------------|---------------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To            |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                        |            |
| 70      |         | 196.30-196.46 | 196.46-196.6  | .16<br>.14          |                     |                  | Lost Coal<br>Coal      | as above                                                                                                               |            |
| 70      |         | 196.6-196.77  |               | .17                 |                     |                  | Mudstone               | carbonaceous and wispy coaly stringers, intact core                                                                    |            |
| 70      |         | 196.77-198.27 |               | 1.50                |                     | 197.24           | Sandstone              | fine grained, calcareous, diffusely laminated, calcite stringers parallel and perpendicular to bedding                 |            |
| 70      |         | 198.27-198.92 |               | .65                 |                     |                  | Siltstone              | very calcareous, mottled/swirly soft sediment texture, mottled sandy lens with sharp contacts, 6 cm concretion at base |            |
| 71      |         | 198.92-199.40 | 199.40-199.20 | .48<br>.20          |                     |                  | Siltstone<br>Lost Core | as above                                                                                                               |            |
| 71      |         | 199.60-199.90 |               | .30                 |                     |                  | Mudstone               | carbonaceous with coaly stringers, polished surfaces                                                                   |            |
| 71      |         | 199.90-200.20 | 200.2-200.43  | .30<br>.23          |                     | 200.24           | Coal<br>Lost Core      | dull with bright bands, lustrous, sheared throughout, broken and powdered                                              | VIT 16 ✓   |
| 71      |         | 200.43-200.70 |               | .27                 |                     |                  | Mudstone               | dark medium gray, occasionally carbonaceous, irregular polished surfaces throughout                                    |            |
| 71      |         | 200.70-200.90 |               | .20                 |                     |                  | Coal                   | dull and bright, sheared, powdered bottom 7 cm                                                                         | VIT 17 ✓   |
| 71      |         | 200.90-201.29 |               | .39                 |                     |                  | Mudstone               | as above, few shear surfaces                                                                                           |            |
| 71      |         | 201.29-201.63 |               | .34                 |                     |                  | Sandstone              | fine grained, argillaceous in places, occasionally coaly stringers, diffusely laminated and mottled, non calcareous    |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                       | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                       |            |
| 72      | 60°     | 201.63 | 202.83 | 1.20               |                    |                  | Sandstone              | as above, fracture at bottom - lined with calcite and non calcareous - soft white mineral fractures which are perpendicular to bedding                |            |
| 72      |         | 202.83 | 203.44 | .61                |                    | 203.29           | Sandstone              | as above, slickensided bedding surfaces, fractures normal to bedding                                                                                  |            |
| 72      |         | 203.44 | 204.17 | .73                |                    | 203.90           | Sandstone              | as above                                                                                                                                              |            |
| 73      |         | 204.17 | 205.97 | 1.80               |                    |                  | Sandstone              | as above, truncated cross bed - right way up                                                                                                          |            |
| 73      | 60°     | 205.97 | 206.81 | .84                |                    | 206.33           | Sandstone              | upper fine grained, slightly carbonaceous, occasional intraclastic zones, low angle cross laminations, rare thin coaly stringers, slightly calcareous |            |
| 74      |         | 206.81 | 207.15 | .34                |                    |                  | Sandstone              | as above, sharp-wavey bottom contact with muddy intraclasts                                                                                           |            |
| 74      |         | 207.15 | 208.08 | .93                |                    |                  | Mudstone               | dark gray, carbonaceous, very coaly bottom 12 cm, coaly                                                                                               |            |
| 74      | 60°     | 208.08 | 208.83 | .75                |                    |                  | Sandstone              | very fine grained, argillaceous, slightly calcareous                                                                                                  |            |
| 74      |         | 208.83 | 209.17 | .34                |                    |                  | Sandstone              | as above                                                                                                                                              |            |
| 74      |         | 209.17 | 209.47 | .30                |                    |                  | Siltstone              | medium gray, very muddy                                                                                                                               |            |
| 75      | 75°     | 209.47 | 211.52 | 2.05               |                    |                  | Siltstone              | as above, muddy upper half, sandy lower half, calcareous, laminated except through middle where is mottled and numerous irregular coal stringers      |            |
|         |         | 211.52 | 212.08 | .56                |                    |                  | Lost Core              |                                                                                                                                                       |            |
| 75      |         | 212.08 | 212.73 | .65                |                    | 212.43           | Sandstone              | as above, only up to fine grain size, mottled, rare coaly stringers, muddy at top                                                                     |            |
| 76      |         | 212.73 | 213.35 | .62                |                    |                  | Siltstone              | grades from sandy to muddy towards base-bottom 10 cm is coaly mudstone                                                                                |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                   | Sample No.    |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                   |               |
| 76      |         | 213.35 | 213.48 | .13                 | .12                 |                  | Coal                   | dull with occasional bright bands (3 mm thick), stick core                                                                                                                                                                                                                                                        |               |
| 76      |         | 213.48 | 213.62 | .14                 | .13                 |                  | Lost Rock              |                                                                                                                                                                                                                                                                                                                   |               |
| 76      |         | 213.62 | 214.01 | .39                 | .35                 |                  | Coal                   | dull and bright, broken at bottom, hard, rare thin fusainous lenses, good cleat in brights                                                                                                                                                                                                                        |               |
| 76      |         | 214.01 | 214.04 | .03                 | .03                 |                  | Lost Coal              |                                                                                                                                                                                                                                                                                                                   |               |
| 76      |         | 214.04 | 214.09 | .05                 | .04                 |                  | Coal                   | bright, crispy, conchoidal fracture                                                                                                                                                                                                                                                                               | VIT 18 ✓      |
| 76      |         | 214.09 | 214.14 | .05                 | .05                 |                  | Coal                   | bright banded, crispy, cleated in brights                                                                                                                                                                                                                                                                         |               |
| 76      |         | 214.14 | 214.28 | .14                 | .13                 |                  | Coal                   | bright, crispy in 1 cm bands between dull polished surfaces                                                                                                                                                                                                                                                       |               |
| 76      |         | 214.28 | 214.40 | .12                 | .11                 |                  | Lost Rock              |                                                                                                                                                                                                                                                                                                                   |               |
|         |         | 214.40 | 214.54 | .14                 | .13                 |                  | Lost Coal              |                                                                                                                                                                                                                                                                                                                   |               |
| 76      |         | 214.54 | 214.61 | .07                 | .06                 |                  | Coal<br>SAMPLE         | dull and bright powder and tiny pieces<br>83-20 Seam 2 213.35-214.61 meters, 1.14 m true thickness                                                                                                                                                                                                                | BULK<br>MAC ✓ |
| 76      |         | 214.61 | 215.43 | .82                 |                     |                  | Mudstone               | medium dark gray, silty laminations throughout, small polished surfaces throughout, carbonaceous in places, occasional thin coaly stringer                                                                                                                                                                        |               |
| 76      | 55°     | 215.43 | 215.68 | .25                 |                     | 215.48           | Mudstone               | silty as above                                                                                                                                                                                                                                                                                                    |               |
| 77      |         | 215.68 | 215.75 | .07                 |                     |                  | Mudstone               | silty as above                                                                                                                                                                                                                                                                                                    |               |
| 77      |         | 215.75 | 215.88 | .13                 |                     |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                   |               |
| 77      | 50°     | 215.88 | 218.53 | 2.65                |                     |                  | Sandstone              | grades from argillaceous - very fine grained to lower fine grained in lower half, parallel and low angle cross laminations (right way up), occasional cross beds 20-30 cm scale, occasional small muddy intraclast zones, distorted and convolute bedding in places, occasional calcite lined fractures normal to |               |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                                 | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |
| 77      |         | 218.53 | 218.61 | .08                |                    |                  | Sandstone                            | bedding, rare - irregular small coaly stringers, good broken stick core, very calcareous<br>as above                                                                                                                                                                                                                                                                                                                                                                                    |            |
| 78      |         | 218.61 | 219.46 | .85                |                    |                  | Sandstone                            | as above, likely sharp contact at base                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| 78      | 60°     | 219.46 | 221.10 | 1.64               |                    |                  | Mudstone/<br>Siltstone/<br>Sandstone | grades to mudstone at top, carbonaceous with coaly wispy stringers in mudstone, sandstone in bottom half has thin - high angle cross beds at base over a sharp contact with mudstone unit below (containing sand filled tubes/burrows) for 20 cm, thick - low angle cross laminations and very thin cross beds directly above for balance of the sand, laminations become parallel in upper half of the sandy siltstone and mudstone is mottled throughout, sandstone is non-calcareous |            |
| 78      |         | 221.10 | 221.23 | .13                |                    |                  | Mudstone                             | dark gray, carbonaceous, sand filled tubes/burrows                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |
| 79      |         | 221.23 | 224.14 | 2.91               |                    | 221.57           | Siltstone                            | very muddy for upper 25 cm, occasionally argillaceous and/or sandy throughout, mottled and burrowed through diffuse bedding remains visible in places, rare wispy calcite along bedding planes, good stick core, non calcareous                                                                                                                                                                                                                                                         |            |
| 80      |         | 224.14 | 224.33 | .19                |                    |                  | Siltstone                            | as above, sandy                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |
| 80      | 55°     | 224.33 | 226.18 | 1.85               |                    | 224.62           | Sandstone                            | up to fine grain size, very fine at top and occasional thinly laminated interbeds, few calcite lined joint fractures normal to bedding, slightly calcareous                                                                                                                                                                                                                                                                                                                             |            |
| 80      | 55°     | 226.18 | 226.77 | .59                |                    |                  | Siltstone                            | with very fine grained sandy laminations throughout, calcite lined fractures normal and parallel to bedding at top                                                                                                                                                                                                                                                                                                                                                                      |            |
| 81      |         | 226.77 | 227.29 | .52                |                    |                  | Siltstone                            | as above, mottled except at top and base                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                         |                                                                                                                                     | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                                           | Amplified (Include Coal Recovery for Each Seam)                                                                                     |            |
| 81      | 45°     | 227.29 | 228.12 | .83                |                    | 227.67           | Siltstone                                      | as above, sandy for 20 cm in middle, muddy at base                                                                                  | VIT 19 ✓   |
| 81      |         | 228.12 | 228.36 | .24                |                    |                  | Mudstone                                       | carbonaceous, dark gray, coaly at base                                                                                              |            |
| 81      |         | 228.36 | 228.40 | .04                |                    |                  | Coal/Coaly                                     | broken pieces                                                                                                                       |            |
|         |         | 228.40 | 229.68 | 1.28               |                    |                  | Mudstone<br>Lost Core                          |                                                                                                                                     |            |
| 81      |         | 229.68 | 230.74 | 1.06               |                    |                  | Siltstone                                      | sandy at top, rare sandy interbeds throughout, decreases in grain size to calcareous mudstone at bottom, very calcareous throughout |            |
| 82      |         | 230.74 | 231.02 | .28                |                    |                  | Siltstone                                      | medium gray, argillaceous, slightly calcareous                                                                                      |            |
| 82      |         | 231.02 | 231.42 | .40                |                    | 230.72           | Siltstone                                      | as above with occasional small carbonaceous fragments, muddy in places                                                              |            |
| 82      |         | 231.42 | 231.80 | .38                |                    |                  | Mudstone                                       | very coaly with abundant tiny bright and wispy stringers throughout, dark brown streak, bottom 3 cm pieces is bright with dull coal |            |
| 82      | 231.80  | 232.97 | 1.17   |                    |                    | Mudstone         | medium gray, coaly top half, silty bottom half |                                                                                                                                     |            |
|         |         | 232.97 |        |                    |                    | 233.77           |                                                | END OF HOLE / TOTAL DEPTH                                                                                                           |            |

ESSO RESOURCES CANADA LIMITED - COAL DIVISION  
CORE & COAL CORE DESCRIPTION

|          |               |
|----------|---------------|
| Project  | FALLING CREEK |
| Map Area | 930,93 P.     |

|       |           |
|-------|-----------|
| Begin | 08/17/83- |
| End   | 08/21/83  |

|                  |                     |
|------------------|---------------------|
| Core Examiner(s) | LK Mudry<br>S. Carr |
|------------------|---------------------|

|          |       |
|----------|-------|
| Hole No. | 83-21 |
|----------|-------|

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of 93

Hole Particulars

|              |                        |
|--------------|------------------------|
| Location     | 43960 m N<br>64492 m E |
| Elevation    | 1390 m                 |
| Total Depth  | 325.3 m                |
| Hole Bearing | -                      |
| Hole Angle   | 90°                    |

Coal Coring Performance

|                |        |
|----------------|--------|
| Core Diameter  | HQ     |
| Core Recovered | 299.49 |
| Length Cored   | 325.3  |
| Core Recovery  | 92.1%  |

Logging

|                 |     |
|-----------------|-----|
| Logged By       | BPB |
| CCS             |     |
| Dipmeter        |     |
| Neutron-Neutron |     |
| LSD/BRD         |     |

|                  |                       |
|------------------|-----------------------|
| Examination Date | 08/19/83-<br>08/31/83 |
|------------------|-----------------------|

| Box No. | BCA (°) | Depth     |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                            | Sample No. |
|---------|---------|-----------|----|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From      | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                            |            |
| 1       |         |           |    | .18                 |                     |                  | MOOSEBAR FORMATION     | Tricone to 10' overburden pebbles                                                                                                                                                                                                                                                                          |            |
| 1       |         | 4.23-4.89 |    | .66                 |                     | 4.9              | Mudstone               | broken, fractures with iron oxide staining                                                                                                                                                                                                                                                                 |            |
| 1       |         | 4.89-6.27 |    | 1.38                |                     |                  | Mudstone               | medium dark grey, iron staining on fractures, rare silty laminations, silty, slickensides, rare coalified plant fragments                                                                                                                                                                                  |            |
| 2       | 90-85°  | 6.27-7.84 |    | 1.57                |                     |                  | Mudstone               | as above, 1mm <sup>2</sup> round to oblong dark grey dots and tubes (probably worm burrows), bioturbation, disturbed silty laminations, disseminated pyrite, possible mica flecks, shell fragments, extremely rare coalified plant fragments                                                               |            |
| 2       |         | 7.84-8.78 |    | .94                 |                     | 7.9              | Mudstone               | 5 cm thick sandy interbed 10 cm from top, soft sediment deformation, slickensides and dark grey polished surfaces-these surfaces often appear as rootlets or dark stringers in sediments, but when broken they are polished and slicked, worm tubes (1 mm scale) are commonly pyritized, silty laminations |            |

| Box No. | BCA (°)  | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                       | Sample No. |
|---------|----------|--------|--------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                       |            |
| 112     | 58       | 317.32 | 318.65 | 1.33               |                    |                  | Sandstone              | some very thin siltstone interbeds and interlaminations at top and bottom, laminated, some cross-laminations, very fine grained and argillaceous, vertical fracture with calcite and disseminated pyrite on it, 30 cm thick interbed in middle of cleaner laminated sandstone (as above) which contains mudstone intra-clasts near top<br>[channel - fluctuating energy regime]<br>sandstones are hard and calcareous |            |
| 113     | 59       | 318.65 | 319.29 | .64                |                    |                  | Sandstone              | medium light grey, very fine grained at top grading down to fine upper grain size at base, laminated and cross-laminated, carbonaceous laminations, hard, calcareous, silica cement, sandstone breaks across grains                                                                                                                                                                                                   |            |
| 113     | 61       | 319.29 | 319.96 | .67                |                    | 319.1            | Sandstone              | medium light grey, fine upper, argillaceous, laminated, very thin siltstone interbeds near top, coaly wisps and coal interlaminations for 20 cm (10 cm from base), extremely hard, sandstone breaks across grains (silica cement and over-growth), calcareous                                                                                                                                                         |            |
| 113     | 64<br>57 | 319.96 | 320.84 | .88                |                    | 319.9            | Sandstone              | as above, coal wisps near top, dirty in middle, abundant carbonaceous laminations                                                                                                                                                                                                                                                                                                                                     |            |
| 113     |          | 320.84 | 320.99 | .15                |                    |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                       |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                             | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                             |            |
| 107     |         | 303.60-303.71 |    | .11                |                    |                  | Mudstone               | dark blackish brown, coaly, highly polished surfaces, near vertical calcite lined polished fracture surface |            |
|         |         | 303.71-304.01 |    | .30                |                    |                  |                        |                                                                                                             |            |
| 107     |         | 304.01-304.16 |    | .15                |                    | 303.9            | Mudstone               | as above, some coal wisps                                                                                   |            |
| 108     |         | 304.16-304.20 |    | .04                |                    |                  | Coal                   | small pieces, dull/dull banded, sheared surfaces oblique to cleat                                           |            |
| 108     |         | 304.20-304.36 |    | .16                |                    |                  | Coal                   | stick, broken at base, dull banded                                                                          |            |
| 108     |         | 304.36-304.49 |    | .13                |                    |                  | Coal                   | powder, dull with bright                                                                                    |            |
| 108     |         | 304.49-304.63 |    | .14                |                    |                  | Coal                   | powder and pieces, dull/dull banded, dull with bright powder                                                |            |
|         |         | 304.63-305.06 |    | .43                |                    |                  | <u>LOST COAL</u>       |                                                                                                             |            |
| 108     |         | 305.06-305.15 |    | .09                |                    |                  | Coal                   | powder, dull                                                                                                |            |
| 108     |         | 305.15-305.19 |    | .04                |                    |                  | Coal                   | small pieces, dull banded                                                                                   |            |
| 108     |         | 305.19-305.27 |    | .08                |                    |                  | Coal                   | powder, dull                                                                                                |            |
|         |         |               |    |                    |                    |                  | Sample                 | <u>sample 8, ply 1, 304.16-305.27</u>                                                                       | Bulk Mac ✓ |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                               | Sample No.               |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------|--------------------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                               |                          |
| 108     |         | 305.27-305.44 |    | .17                |                    |                  | Coal                   | pyritized, pyrite has grainy texture, sample 6 cm                                             | Pyrite Sample Bulk Mac ✓ |
|         |         | 305.44-305.70 |    | .26                |                    |                  | <u>LOST COAL</u>       | as above                                                                                      |                          |
|         |         | 305.70-305.89 |    | .19                |                    |                  | Sample                 | <u>sample 8, ply 2 305.27-305.70</u>                                                          |                          |
|         |         | 305.89-306.03 |    | .14                |                    |                  | <u>LOST COAL</u>       |                                                                                               |                          |
|         |         |               |    |                    |                    |                  | <u>LOST CORE</u>       |                                                                                               |                          |
| 108     |         | 306.03-306.32 |    | .29                |                    |                  | <u>LOST COAL</u>       |                                                                                               |                          |
|         |         | 306.32-306.45 |    | .13                |                    |                  | <u>LOST CORE</u>       |                                                                                               |                          |
|         |         | 306.45-306.60 |    | .15                | 306.6              | Mudstone         |                        | coaly, irregularly oriented calcite stringers                                                 |                          |
|         |         |               |    |                    |                    | Sampled          |                        | <u>sample 8, ply 4 306.32-306.60</u>                                                          |                          |
| 108     |         | 306.60-306.69 |    | .09                |                    | Coal             |                        | dull, small pieces                                                                            |                          |
| 108     |         | 306.69-306.74 |    | .05                |                    | Coal             |                        | broken, dull banded                                                                           |                          |
| 108     |         | 306.74-306.87 |    | .13                |                    | Coal             |                        | stick, dull banded, sheared surfaces                                                          |                          |
|         |         | 306.87-307.06 |    | .19                |                    | <u>LOST COAL</u> |                        |                                                                                               |                          |
| 108     |         | 307.06-307.07 |    | .01                |                    | Coal/            |                        | small peices and powder                                                                       |                          |
|         |         |               |    |                    |                    | Coaly Mudstone   |                        |                                                                                               |                          |
|         |         |               |    |                    |                    | Sample           |                        | <u>sample 8, ply 3 306.60-307.07</u>                                                          |                          |
| 108     |         | 307.07-307.12 |    | .05                |                    | Mudstone         |                        | coaly                                                                                         |                          |
|         |         |               |    |                    |                    | Sample           |                        | <u>sample 9, ply 4 307.07-307.20</u>                                                          |                          |
|         |         | 307.12-307.20 |    | .08                |                    | <u>LOST CORE</u> |                        |                                                                                               |                          |
|         |         | 307.20-307.52 |    | .32                |                    | <u>LOST COAL</u> |                        |                                                                                               |                          |
| 108     |         | 307.52-307.58 |    | .06                | 307.5              | Coaly Mudstone   |                        | very coaly with bright coal wisps throughout and some bright bands                            |                          |
|         |         | 307.58-307.78 |    | .20                |                    | <u>LOST CORE</u> |                        | mudstone                                                                                      |                          |
| 108     |         | 307.78-308.40 |    | .62                |                    | Siltstone        |                        | massive, some carbonaceous and coaly plant fragments, slightly carbonaceous and muddy at base |                          |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                      | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                      |            |
| 109     |         | 308.40-308.82 |    | .42                 |                     |                  | Sandy Siltstone        | splintery fracture, medium grey, carbonaceous plant fragments, highly mottled and churned, broken at base                                                                                            |            |
|         |         | 308.82-309.02 |    | .20                 |                     |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                      |            |
| 109     |         | 309.02-309.62 |    | .60                 |                     |                  | Mudstone               | medium dark grey, crackly fracture, broken at top, small burrows, silty in places, some carbonaceous plant fragments                                                                                 |            |
| 109     |         | 309.62-309.91 |    | .29                 |                     |                  | Siltstone              | calcite cemented zone near top with calcite and quartz crystals growing on a fracture surface perpendicular to core axis                                                                             |            |
| 109     |         | 309.92-310.25 |    | .34                 |                     |                  | Mudstone               | dark grey, carbonaceous plant fragments, highly polished surfaces, silty in places, broken at base                                                                                                   |            |
|         |         |               |    |                     |                     | ?                |                        | Porcupine got the marker block                                                                                                                                                                       |            |
| 109     |         | 310.25-311.0  |    | .75                 |                     |                  | Mudstone               | silty, medium dark grey, crackly fracture, broken throughout, some polished surfaces with calcite mineralization near the top, a few carbonaceous plant fragments                                    |            |
| 110     |         | 311.0 -311.91 |    | .91                 |                     |                  | Mudstone               | as above, siltstone band in middle, moderately broken                                                                                                                                                |            |
|         |         | 311.91-312.06 |    | .15                 |                     |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                      |            |
| 110     | 54      | 312.06-313.27 |    | 1.21                |                     |                  | Sanstone               | medium light grey, very fine grained, faint laminations, dirty, some muddy bands, a few burrows, some laminations near base, rare carbonaceous plant fragments and rare carbonaceous interlamination |            |

| Box No. | BCA (°)  | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                           | Sample No. |
|---------|----------|--------|--------|---------------------|---------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                           |            |
| 110     | 57       | 313.27 | 313.69 | .42                 |                     | 313.0            | Sandstone               | as above                                                                                                                                                                                                                                                                                                                                  |            |
| 111     | 59       | 313.69 | 314.23 | .54                 |                     |                  | Sandstone               | as above, muddy bands near base, a few distinct laminations and cross-beds at base                                                                                                                                                                                                                                                        |            |
| 111     | 52<br>50 | 314.23 | 316.09 | 1.89                |                     | 313.9            | Sandstone               | very fine grained and medium grey at top with very thin siltstone and mudstone interlaminations, bottom half has very fine to upper fine grained, light grey interbeds, laminated and cross-laminated at base, calcite slickenside near base, clean vertical joint plane at base, a few thin bioturbated horizons [upper-lower point bar] |            |
| 112     |          | 316.09 | 316.32 | .23                 |                     |                  | Sandstone               | medium grey, argillaceous, very fine grained, mottled                                                                                                                                                                                                                                                                                     |            |
| 112     | 55       | 316.32 | 316.48 | .16                 |                     | 316.1            | Sandstone               | medium light grey, carbonaceous laminations, laminated, cross-laminated, calcite vein parallel to bedding near top, sandstone is hard                                                                                                                                                                                                     |            |
| 112     | 64       | 316.48 | 316.84 | .36                 |                     |                  | Sandstone/<br>Siltstone | very thinly interbedded, convolute bedding, bioturbated in middle, calcareous                                                                                                                                                                                                                                                             |            |
| 112     | 65       | 316.84 | 317.32 | .48                 |                     |                  | Sandstone               | medium light grey, carbonaceous laminations especially near base, coal wisps and polished carbonaceous surfaces near base, upper fine grained, very hard, calcareous                                                                                                                                                                      |            |



| Box No. | BCA (°)        | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                            | Sample No. |
|---------|----------------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                            |            |
| 113     |                | 320.99 | 321.06 | .07                |                    |                  | Siltstone Breccia      | very heavy and hard, ground at top, large clast or nodule, ?concretion, ? siderite cement, irregularly oriented calcite veins throughout                                                                                                                                                                                                                                                                                                   |            |
| 113     |                | 321.06 | 321.16 | .10                |                    |                  | Sandstone              | coarse - medium grained, light grey, argillaceous matrix, subrounded mudstone clasts up to 3 cm in diameter, coal stringer, polished carbonaceous surfaces [channel lag] very hard                                                                                                                                                                                                                                                         |            |
| 113     |                | 321.16 | 321.23 | .07                |                    | 321.0            | Sandstone              | medium grained, light grey, elongate sub-angular mudstone intraclasts from mm scale to 1 cm size, coal stringers [channel lag] very hard                                                                                                                                                                                                                                                                                                   |            |
| 114     | 66             | 321.23 | 321.41 | .18                |                    |                  | Sandstone              | as above                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |
| 114     |                | 321.41 | 321.44 | .03                |                    |                  | Siltstone              | carbonaceous plant fragments, polished surfaces                                                                                                                                                                                                                                                                                                                                                                                            |            |
| 114     | 47<br>55<br>58 | 321.44 | 323.7  | 2.26               |                    |                  | Sandstone              | light grey, fine and medium grained interbeds, laminated, carbonaceous laminations, coal stringers, disseminated pyrite on carbonaceous laminations, then horizon containing elongate mudstone intraclasts up to 1 cm in length, abundant small (up to 1 cm) mudstone intraclasts and abundant coal stringers at base [channel facies], cross laminations, very hard, sandstone breaks across sand grains, calcareous, sharp lower contact |            |
| 114     | 64             | 323.7  | 323.92 | .22                |                    |                  | Sandstone              | very fine grained, medium grey, siltstone interlaminations, coal stringers, cross beds, abundant carbonaceous plant fragments, root structure at top, calcite wisps [upper point bar]                                                                                                                                                                                                                                                      |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                       | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                       |            |
| 115     | 60      | 323.92-324.17 |    | .25                 |                     |                  | Sandstone              | as above                                                                                                                                                                              |            |
|         |         | 324.17-324.27 |    | .10                 |                     |                  | <u>LOST CORE</u>       |                                                                                                                                                                                       |            |
| 115     | 63      | 324.27-325.30 |    | 1.03                |                     | 324.3<br>325.2   | Sandstone              | as above, near vertical fracture, carbonaceous and calcite slickensides, very hard, silica cemented [upper point bar]<br><br>Driller Depth<br><br>END OF HOLE, LOGGER'S DEPTH 325.3 m |            |

| Box No. | BCA (°)  | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                  | Sample No. |
|---------|----------|--------|--------|--------------------|--------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                  |            |
| 84      |          | 240.18 | 240.86 | .68                |                    |                  | Mudstone                | 5 cm thick coal interbed (19 cm from top), coal stringers throughout, abundant carbonaceous plant fragments      | VIT22 ✓    |
| 85      |          | 240.86 | 241.27 | .41                |                    |                  | Mudstone                | as above, coaly plant fragments, coal wisps                                                                      |            |
|         |          | 241.27 | 241.46 | .19                |                    |                  |                         |                                                                                                                  |            |
| 85      |          | 241.46 | 241.55 | .09                |                    |                  | Coal                    | powder, dull (with some bright)                                                                                  |            |
| 85      |          | 241.55 | 241.72 | .17                |                    |                  | Sandy Siltstone         | highly bioturbated, sandy at base [overbank]                                                                     |            |
| 85      |          | 241.72 | 241.83 | .11                | 241.7              |                  | Silty Sandstone         | as above                                                                                                         |            |
| 85      |          | 241.83 | 242.47 | .64                |                    |                  | Mudstone                | coal wisps, carbonaceous plant fragments, carbonaceous polished surfaces throughout, coaly near top              |            |
| 85      | 58<br>62 | 242.47 | 243.06 | .59                |                    |                  | Sandstone/<br>Siltstone | interlaminated, cross-laminations, root structures, some zones are highly bioturbated, burrows [upper point bar] |            |
| 85      |          | 243.06 | 243.49 | .43                |                    |                  | Siltstone/<br>Sandstone | as above, calcite stringers (parallel to bedding), abundant root structures                                      |            |

| Box No. | BCA (°)        | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Sample No. |
|---------|----------------|--------|--------|--------------------|--------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |
| 86      | 65<br>68<br>64 | 243.49 | 246.07 | 2.58               |                    |                  | Sandstone/<br>Siltstone | interlaminated and very thinly interbedded, cross-laminations, 30 cm thick siltstone interbed 90 cm from top of unit, roots, some bioturbated horizons, some distinct burrows, some mudstone interbeds in lower half, contacts between sandstones and mudstones are sharp with flame and ball and pillow structures, contorted bedding and burrows, carbonaceous interlaminations, coal stringers, calcite wisps parallel to bedding, sandstone is very fine to upper fine grained, argillaceous and medium grey [upper point bar] |            |
| 87      | 59<br>56<br>50 | 246.07 | 248.74 | 2.67               |                    | 245.97           | Sandstone/<br>Siltstone | as above, some thin mudstone interbeds in upper half                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |
| 88      |                | 248.74 | 249.14 | .40                |                    |                  | Sandstone/<br>Siltstone | as above, bioturbated at top, cross laminated at base, at base sandstone is light grey, to fine lower grain size and cleaner than above sandstones                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 88      |                | 249.14 | 249.50 | .36                |                    | 249.02           | Mudstone/<br>Siltstone  | faint laminations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| 88      |                | 249.50 | 251.41 | 1.91               |                    |                  | Mudstone                | 30 cm thick siltstone interbed 25 cm from base, abundant carbonaceous plant fragments, coal stringers, polished carbonaceous surfaces                                                                                                                                                                                                                                                                                                                                                                                              |            |
| 89      |                | 251.41 | 251.77 | .36                |                    |                  | Silty Mudstone          | some carbonaceous plant fragments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| 89      |                | 251.77 | 252.40 | .63                |                    | 252.06           | Mudstone                | moderately broken throughout, some horizons contain carbonaceous plant fragments                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                             | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                             |            |
| 89      |         | 252.40 | 252.52 | .12                |                    |                  | Coal                   | dull, lustrous due to shearing                                                                              |            |
| 89      |         | 252.52 | 252.66 | .14                |                    |                  | Coal                   | stick, bright                                                                                               |            |
| 89      |         | 252.66 | 252.70 | .04                |                    |                  | Coal                   | powder and small pieces, dull with bright                                                                   |            |
|         |         | 252.70 | 252.76 | .06                |                    |                  | <u>LOST COAL</u>       |                                                                                                             |            |
| 89      |         | 252.76 | 252.82 | .06                |                    |                  | Mudstone               |                                                                                                             |            |
|         |         | 252.82 | 252.91 | .09                |                    |                  | <u>LOST CORE</u>       |                                                                                                             |            |
| 89      |         | 252.91 | 252.99 | .08                |                    |                  | Coal                   | stick, dull with some bright bands                                                                          |            |
| 89      |         | 252.99 | 253.06 | .07                |                    |                  | Coal                   | powder, dull                                                                                                |            |
|         |         | 253.06 | 253.07 | .01                |                    |                  | <u>LOST COAL</u>       |                                                                                                             |            |
| 89      |         | 253.07 | 253.24 | .17                |                    |                  | Mudstone               | abundant carbonaceous plant fragments, silty at base, carbonaceous throughout, broken at bottom             |            |
| 89      |         | 253.24 | 253.59 | .35                |                    | 253.59           | Siltstone              | slightly carbonaceous, carbonaceous plant fragments, muddy at base, near vertical polished fracture surface |            |
| 90      | 60      | 253.59 | 254.41 | .81                |                    |                  | Silty Mudstone         | moderately broken throughout, coal stringers throughout, polished surfaces, abundant plant fragments        |            |
|         |         | 254.41 | 254.43 | .02                |                    |                  | <u>LOST CORE</u>       |                                                                                                             |            |

| Box No. | BCA (°)        | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                | Sample No. |
|---------|----------------|--------|--------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                |            |
| 90      |                | 254.43 | 254.49 | .06                 |                     |                  | Coal                   | powdered, dull with bright                                                                                                                                                                                     |            |
| 90      |                | 254.49 | 254.60 | .11                 |                     |                  | Coal                   | powdered, dull                                                                                                                                                                                                 |            |
| 90      |                | 254.60 | 255.12 | .52                 |                     |                  | <u>LOST COAL</u>       |                                                                                                                                                                                                                |            |
| 90      |                | 255.12 | 255.14 | .02                 |                     |                  | Coal                   | dull banded, broken into small pieces                                                                                                                                                                          |            |
| 90      |                | 255.14 | 255.17 | .03                 |                     | 255.11           | Coal                   | dull banded                                                                                                                                                                                                    |            |
| 90      |                | 255.17 | 255.20 | .03                 |                     |                  | Coal                   | dull                                                                                                                                                                                                           |            |
| 90      |                | 255.20 | 256.46 | 1.26                |                     |                  | Siltstone              | mudstone interbed in center, abundant carbonaceous plant fragments, coaly wisps, polished carbonaceous surfaces in mudstone, calcite suckensides in siltstone, calcite wisps throughout                        |            |
| 91      | 64             | 256.46 | 257.95 | 1.49                |                     |                  | Siltstone/<br>Mudstone | interbeds range from 2 - 25 cm thick, generally mottled and bioturbated, laminated near top and bottom, coal stringers in mudstone interbeds, polished surfaces in mudstone, calcite wisps parallel to bedding |            |
| 91      |                | 257.95 | 258.62 | .67                 |                     | 258.16           | Mudstone               | with thin siltstone interbeds, coal stringers, calcite wisps parallel to bedding, polished carbonaceous surfaces, faintly laminated throughout                                                                 |            |
| 91      | 58<br>66<br>59 | 258.62 | 259.04 | .42                 |                     |                  | Sandstone              | laminated and cross laminated, root structures, very fine grained, medium light grey and argillaceous                                                                                                          |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                |            |
| 92      | 54      | 259.18 | 259.74 | .56                |                    |                  | Sandstone/Siltstone    | laminated at base, abundant, well preserved root structures, upper half is highly bioturbated, carbonaceous interlaminae, calcite wisps parallel to bedding at base, sandstone is medium grey, argillaceous and very fine grained                                                                                                                                                              |            |
| 92      |         | 259.74 | 259.85 | .12                |                    |                  | Coal                   | powder and pieces, dull/dull banded                                                                                                                                                                                                                                                                                                                                                            |            |
|         |         | 259.86 | 295.99 | .13                |                    |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                                                                                                                                |            |
| 92      |         | 259.99 | 260.30 | .31                |                    |                  | Mudstone               | sheared and polished throughout, some carbonaceous plant fragments                                                                                                                                                                                                                                                                                                                             |            |
| 92      | 64      | 260.30 | 261.14 | .84                |                    |                  | Siltstone              | mudstone interbeds at top and bottom, sandy interlaminae in middle, some coal stringers, calcite wisps parallel to bedding, some horizons are mottled and bioturbated, abundant carbonaceous plant fragments                                                                                                                                                                                   |            |
| 92      | 54      | 261.14 | 261.82 | .68                |                    | 261.2            | Siltstone              | as above, grades downwards to mudstone at base, laminated at top                                                                                                                                                                                                                                                                                                                               |            |
| 92      |         | 261.82 | 263.20 | 1.38               |                    |                  | Mudstone               | with siltstone interbeds near top and middle, siltstone interbeds are sandy, laminated and highly rooted, mudstone has coal wisps and calcite wisps, especially near the base, calcite vein near the base, highly bioturbated zone near middle with abundant burrows, some horizons contain abundant carbonaceous plant fragments, carbonaceous at base, polished surfaces, vertical fractures |            |
| 92      |         | 263.20 | 264.11 | .91                |                    |                  | Siltstone              | with mudstone interbeds, highly bioturbated, slightly sandy in places, brownish grey color, roots, crackly fracture                                                                                                                                                                                                                                                                            |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION             |                                                                                                                                                                                                                                                                                                                                         | Sample No.                  |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
|         |         | From   | To     |                     |                     |                  | MAIN                               | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                         |                             |
| 93      |         | 264.11 | 264.48 | .37                 |                     | 264.26           | Mudstone                           | grading down to laminated, bioturbated sandstone at base, mudstone is faintly laminated and highly bioturbated, carbonaceous plant fragments [overbank]                                                                                                                                                                                 |                             |
| 94      | 57      | 264.48 | 264.78 | .30                 |                     |                  | Sandstone                          | olive grey, argillaceous, upper fine grained, laminated, slightly bioturbated, some roots, some muddy interlamination, abrupt basal contact [creek/small channel?/splay?] fines upward into overlying unit                                                                                                                              |                             |
| 94      | 59      | 264.78 | 266.97 | 2.19                |                     |                  | Mudstone/<br>Siltstone             | at top grading downward to siltstone/mudstone with thin sandy bands near base, mudstone is dark grey with coal wisps, calcite stringers, abundant plant fragments and polished surfaces, siltstone is brownish grey with root horizons, burrows and some carbonaceous plant fragments, highly churned giving mottled texture [overbank] |                             |
| 95      |         | 266.97 | 268.31 | 1.34                |                     | 267.30           | Mudstone                           | with silty bioturbated horizons at top and near middle, carbonaceous plant fragments, abundant polished surfaces, coal wisps with associated calcite wisps, highly broken at base                                                                                                                                                       | VIT25<br>coal<br>stringer ✓ |
|         |         | 268.31 | 268.40 | .09                 |                     |                  | <u>LOST CORE</u>                   |                                                                                                                                                                                                                                                                                                                                         |                             |
| 95      |         | 268.40 | 268.51 | .11                 |                     |                  | Coal/Coaly<br>Mudstone             | dull coal powder, coaly mudstone in small pieces                                                                                                                                                                                                                                                                                        |                             |
|         |         | 268.51 | 268.80 | .29                 |                     |                  | <u>LOST COAL/</u><br>Coal Mudstone |                                                                                                                                                                                                                                                                                                                                         |                             |
| 95      |         | 268.80 | 269.47 | .67                 |                     | 269.13           | Mudstone                           | abundant carbonaceous and coaly plant fragments, thin bioturbated sandy horizon at top, crackly fracture, moderately broken throughout                                                                                                                                                                                                  |                             |
|         |         | 269.47 | 269.67 | .20                 |                     |                  | <u>LOST CORE</u>                   |                                                                                                                                                                                                                                                                                                                                         |                             |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                            | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                            |            |
| 95      |         | 269.67 | 270.03 | .36                |                    |                  | Sandstone              | medium light grey, dirty, well developed root structure, grades to siltstone at base, very fine grained, vertical joint plane, massive - no visible sedimentary structures [floodplain]                                                                                                                                                    |            |
| 95      |         | 270.03 | 270.31 | .28                |                    |                  | Muddy Siltstone        | clean vertical joint plane, some carbonaceous plant fragments                                                                                                                                                                                                                                                                              |            |
| 96      |         | 270.3  | 272.05 | 1.74               |                    |                  | Muddy Siltstone        | with 30 cm thick sandstone interbeds, sandstones are medium, light grey, upper fine grained, dirty, churned and have root structures, siltstones have some carbonaceous, highly broken in middle, calcite stringers perpendicular to core axis, calcite lined vertical joint surface, slickensides rear top of unit [floodplain]           |            |
| 96      |         | 272.05 | 272.91 | .86                |                    | 272.18           | Sandstone/Siltstone    | thin interbeds of siltstone in sandstone interlamination, sandstone interbeds are bioturbated with distinct burrows and they contain numerous, well developed root structures, sandstones are very fine grained and are dirty, calcite stringer parallel to bedding, grades to mudstone at base (floodplain?, splay?, intermittant creek?) |            |
| 97      |         | 272.91 | 274.20 | 1.29               |                    |                  | Mudstone               | some coal stringers, carbonaceous plant fragments, wood imprints, silty, calcite wisps parallel to bedding, some silty bioturbated horizons, coaly at base                                                                                                                                                                                 |            |
| 97      |         | 274.20 | 274.26 | .06                |                    |                  | Coal/Coaly Mudstone    | powder and small pieces, coal is dull                                                                                                                                                                                                                                                                                                      |            |
|         |         | 274.26 | 274.50 | .24                |                    |                  |                        |                                                                                                                                                                                                                                                                                                                                            |            |
| 94      |         | 274.50 | 275.76 | 1.26               |                    | 274.62           | Mudstone               | coaly at top, abundant carbonaceous plant fragments, interbed of bioturbated siltstone grading down to rooted, laminated, dirty sandstone in middle of unit [splay?/intermittant creek?]                                                                                                                                                   |            |

| Box No. | BCA (°)  | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Sample No. |
|---------|----------|--------|--------|---------------------|---------------------|------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                          |            |
| 98      | 46<br>48 | 275.76 | 276.32 | .56                 |                     |                  | Sandstone               | dirty and argillaceous, mudstone interlaminations, numerous root structures, slightly bioturbated, muddy at top, abundant carbonaceous plant fragments, polished carbonaceous plant fragments, polished carbonaceous fragments [upper point bar]                                                                                                                                                                                                         |            |
| 98      | 60       | 276.32 | 278.35 | 2.03                |                     | 276.45           | Siltstone/<br>Sandstone | thinly interbedded and interlaminated, 10-30 cm scale fining upward sequences, mudstone interbeds and interlaminations at base, laminated horizons, bioturbated horizons, rooted sandy interbeds, coal wisps, calcite wisps and stringers parallel to bedding, some horizons contain abundant coaly and carbonaceous plant fragments [upper point bar] a few sandstone horizons are laminated and cross laminated [intermittant flow regime, low energy] |            |
| 99      | 60       | 278.35 | 279.32 | .97                 |                     |                  | Siltstone/<br>Sandstone | as above, grades downward into underlying unit                                                                                                                                                                                                                                                                                                                                                                                                           |            |
| 99      | 64       | 279.32 | 280.96 | 1.64                |                     | 279.50           | Siltstone/<br>Mudstone  | thinly interbedded except for a 22 cm thick mudstone interbed in the centre of the unit, abundant carbonaceous plant fragments, sandy at top, sandstone laminations in siltstone, siltstone and mudstone interbeds are generally highly bioturbated, mottled and churned [upper point bar, low energy, intermittant flow regime] calcite wisps parallel to bedding                                                                                       |            |
| 100     |          | 280.96 | 282.18 | 1.22                |                     |                  | Sandstone/<br>Siltstone | gradational with overlying unit, muddy interlaminations at top, sandstone predominates in lower part of unit, some horizons are rooted, some are bioturbated with burrows, lower 40 cm is laminated and cross laminated lower flow regime, upper point bar] some calcite wisps parallel to bedding                                                                                                                                                       |            |

| Box No. | BCA (°)        | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                        | Sample No.   |
|---------|----------------|--------|--------|---------------------|---------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|         |                | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                        |              |
| 100     | 58<br>63<br>68 | 282.18 | 282.86 | .68                 |                     | 282.59           | Sandstone               | siltstone/mudstone interlamina-tions throughout, laminated and cross-laminated, some cross-beds (right way up), carbonaceous interlamina-tions [upper-lower point bar] | VIT 26       |
| 100     |                | 282.86 | 283.72 | .86                 |                     |                  | Siltstone               | with very thin bioturbated/laminated sandstone interbeds, calcite wisps parallel to bedding, coal wisps, [upper point bar - lower energy]                              |              |
| 101     |                | 283.72 | 284.13 | .41                 |                     |                  | Sandstone               | light grey, laminated, lower fine grained grading to very fine grained at top, some roots [lower-upper point bar]                                                      |              |
| 101     |                | 284.13 | 284.52 | .39                 |                     |                  | Siltstone/<br>Sandstone | laminated, highly broken                                                                                                                                               |              |
|         |                | 284.52 | 284.83 | .31                 |                     |                  | <u>LOST CORE</u>        |                                                                                                                                                                        |              |
| 101     |                | 284.83 | 285.08 | .25                 |                     |                  | Mudstone                | carbonaceous and coaly towards base, moderately broken                                                                                                                 |              |
| 101     |                | 285.08 | 285.16 | .08                 |                     |                  | Coal                    | powder, dull, with some coaly mudstone pieces                                                                                                                          |              |
|         |                | 285.16 | 285.68 | .52                 |                     |                  | <u>LOST COAL</u>        |                                                                                                                                                                        |              |
|         |                | 285.68 | 285.79 | .11                 |                     |                  | Coal                    | powder, dull with bright                                                                                                                                               |              |
|         |                |        |        |                     |                     |                  | Sample                  | <u>sample 7, ply 1</u> 285.08-285.79                                                                                                                                   |              |
| 101     |                | 285.79 | 285.95 | .16                 |                     | 285.58           | Mudstone                | polished carbonaceous surfaces, coal wisps, calcite wisps, abundant carbon-aceous plant fragments                                                                      | BULK<br>MAC. |
|         |                | 285.95 | 285.96 | .01                 |                     |                  | <u>LOST CORE</u>        |                                                                                                                                                                        |              |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                  | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                  |            |
| 101     |         | 285.96 | 286.01 | .05                 |                     |                  | Coaly Mudstone         | sharp basal contact                                                                                              |            |
|         |         |        |        |                     |                     |                  | Sample                 | <u>sample 7, ply 2</u> 285.79-286.01 m                                                                           |            |
| 101     |         | 286.01 | 286.05 | .04                 |                     |                  | Coal                   | dull, lustrous                                                                                                   |            |
|         |         | 286.05 | 286.28 | .27                 |                     |                  | <u>LOST COAL</u>       |                                                                                                                  |            |
| 101     |         | 286.28 | 286.37 | .09                 |                     |                  | Coal                   | highly broken, dull/dull banded                                                                                  |            |
|         |         |        |        |                     |                     |                  | Sample                 | <u>sample 7, ply 3</u> 286.01-286.37 m                                                                           |            |
|         |         | 286.37 | 286.47 | .10                 |                     |                  | <u>LOST CORE</u>       |                                                                                                                  |            |
| 101     |         | 286.47 | 286.54 | .07                 |                     |                  | Coaly Mudstone         |                                                                                                                  |            |
|         |         |        |        |                     |                     |                  | Sample                 | sample 7, ply 2 286.37-286.54                                                                                    |            |
| 101     |         | 286.54 | 286.60 | .06                 |                     |                  | Coal                   | dull with mudstone lenses and a 2 cm thick coaly mudstone band in middle                                         |            |
|         |         | 286.60 | 286.66 | .06                 |                     |                  | <u>LOST COAL</u>       |                                                                                                                  |            |
|         |         |        |        |                     |                     |                  | Sample                 | sample 7, ply 3 286.54.-286.66                                                                                   |            |
|         |         | 286.66 | 286.67 | .01                 |                     |                  | <u>LOST CORE</u>       |                                                                                                                  |            |
| 101     |         | 286.67 | 286.85 | .18                 |                     |                  | Coaly Mudstone         | broken                                                                                                           |            |
|         |         |        |        |                     |                     |                  | Sample                 | sample 7, ply 2 286.66-286.85 m                                                                                  |            |
|         |         | 286.85 | 287.04 | .19                 |                     |                  | <u>LOST COAL</u>       |                                                                                                                  |            |
| 101     |         | 287.04 | 287.17 | .13                 |                     |                  | Coal                   | powder and small pieces, dull with bright                                                                        |            |
|         |         |        |        |                     |                     |                  | Sample                 | sample 7, ply 3 286.85-287.17                                                                                    |            |
| 101     |         | 287.17 | 287.31 | .14                 |                     |                  | Mudstone               | coal wisps at top, carbonaceous plant fragments, polished surfaces                                               |            |
| 102     |         | 287.31 | 287.71 | .40                 |                     |                  | Mudstone               | silty towards base, faint laminations, bioturbation, coal wisps, abundant plant fragments, highly broken at base |            |
|         |         | 287.71 | 288.31 | .60                 |                     |                  | <u>LOST CORE</u>       |                                                                                                                  |            |

| Box No. | BCA (°)        | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                                                                                                  | Sample No. |
|---------|----------------|--------|--------|--------------------|--------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                  |            |
| 102     |                | 288.31 | 288.83 | .52                |                    |                  | Siltstone/<br>Mudstone  | laminated and rooted at top, brownish grey, 10 cm thick carbonaceous mudstone in middle, carbonaceous plant fragment [upper point bar/overbank]                                                                                                                                                                                                                                                                  |            |
| 102     |                | 288.83 | 290.52 | 1.69               | 288.7              |                  | Siltstone/<br>Mudstone  | thinly interbedded and interlaminated, calcite wisps parallel to bedding, root structures, bioturbated and churned horizons, 48 cm thick laminated, rooted, upper fine grained, dirty sandstone interbed in middle [upper point bar], carbonaceous plant fragments                                                                                                                                               |            |
| 103     | 60<br>67<br>71 | 290.52 | 291.81 | 1.29               |                    |                  | Siltstone/<br>Mudstone  | as above, sandy horizons in upper half, calcite wisps and veins parallel to bedding [upper point bar/overbank]                                                                                                                                                                                                                                                                                                   |            |
| 103     |                | 291.81 | 293.20 | 1.39               | 291.7              |                  | Siltstone/<br>Mudstone  | as above, calcite wisps and veins, sandy near base, [upper point bar/overbank]                                                                                                                                                                                                                                                                                                                                   |            |
| 104     |                | 293.20 | 294.82 | 1.62               |                    |                  | Sandstone/<br>Siltstone | very thinly interbedded and interlaminated, sandstone is medium brownish grey, very fine to fine upper in grain size, dirty, has carbonaceous interlaminae and some contorted bedding, moderate bioturbation in some horizons, burrows, root structures in some horizons, calcite stringers parallel to bedding [upper point bar], some sandstones are cross-laminated or cross-bedded [lower-upper flow regime] |            |
| 104     |                | 294.82 | 295.87 | 1.05               |                    |                  | Sandstone/<br>Siltstone | as above                                                                                                                                                                                                                                                                                                                                                                                                         |            |

| Box No. | BCA (°)        | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                       | Sample No. |
|---------|----------------|--------|--------|---------------------|---------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                       |            |
| 105     | 57<br>57       | 295.87 | 297.83 | 1.96                |                     |                  | Sandstone/<br>Siltstone | as above, abundant root structures, a few horizons are bioturbated (not as predominant as above units), cross-laminated and cross-bedded horizons are more predominant than overlying units [lower-upper point bar - energy fluctuations or intermittent flow result in thin interbeds], sandstone:siltstone = 65:35% |            |
| 105     |                | 297.83 | 298.69 | .86                 |                     | 297.8            | Sandstone/<br>Siltstone | as above<br>sandstone:siltstone = 65:35%, some very thin mudstone interbeds                                                                                                                                                                                                                                           |            |
| 106     | 52             | 298.69 | 300.74 | 2.05                |                     |                  | Sandstone/<br>Siltstone | as above<br>sandstone:siltstone = 50:50, abundant root structures, more bioturbation than in above two units, some very thin mudstone interbeds, calcite wisps parallel to bedding                                                                                                                                    |            |
| 106     | 56             | 300.74 | 301.31 | .57                 |                     | 300.8            | Sandstone/<br>Siltstone | as above, sandstone:siltstone = 50:50, calcite wisps parallel to bedding                                                                                                                                                                                                                                              |            |
| 107     |                | 301.31 | 301.60 | .29                 |                     |                  | Mudstone                | slightly carbonaceous, abundant carbonaceous surfaces, polished surfaces throughout, calcite wisps at base                                                                                                                                                                                                            |            |
| 107     | 60<br>58<br>61 | 301.60 | 303.60 | 2.00                |                     |                  | Sandstone/<br>Siltstone | as before, sandstone:siltstone = 60:40%, root structures, some bioturbated horizons, carbonaceous laminations in sandstones, some sandstones are fine lower in grain size, calcite wisps throughout, calcite filled micro-faulted tension gashes near base                                                            |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                           | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                           |            |
| 74      |         | 210.77 | 211.13 | .36                 |                     |                  | Siltstone               | as before, muddy at top                                                                                                                                   |            |
| 74      |         | 211.13 | 211.43 | .30                 |                     |                  | <u>LOST CORE</u>        |                                                                                                                                                           |            |
|         |         | 211.43 | 211.59 | .16                 |                     |                  | Mudstone/<br>Siltstone  | crackly fracture, broken, very sheared at top (highly polished carbonaceous surfaces)                                                                     |            |
| 74      |         | 211.59 | 211.71 | .12                 |                     |                  | Coal                    | powder, appears to be dull/dull with bright                                                                                                               |            |
|         |         | 211.71 | 212.11 | .40                 |                     |                  | <u>LOST COAL</u>        |                                                                                                                                                           |            |
| 75      |         | 212.11 | 212.12 | .01                 |                     | 212.1            | Coal                    | as above                                                                                                                                                  |            |
|         |         | 212.12 | 212.47 | .35                 |                     |                  | <u>LOST CORE</u>        |                                                                                                                                                           |            |
| 75      |         | 212.47 | 212.81 | .34                 |                     |                  | Mudstone                | highly broken with polished carbonaceous surfaces at top, coaly with thick bright band in middle, very coaly and broken for bottom 2 cm, crackly fracture |            |
|         |         | 212.81 | 213.20 | .39                 |                     |                  | <u>LOST CORE</u>        |                                                                                                                                                           |            |
| 75      | 40      | 213.20 | 214.08 | .88                 |                     |                  | Mudstone                | coaly at top and bottom, coal wisps and stringers throughout, bottom half is silty, 15 cm thick laminated siltstone interbed 15 cm from base              |            |
| 75      |         | 214.08 | 214.10 | .02                 |                     |                  | Coaly Mudstone/<br>Coal | powder, coal appears to be dull with bright                                                                                                               |            |
| 75      |         | 214.10 | 214.70 | .60                 |                     |                  | <u>LOST CORE</u>        |                                                                                                                                                           |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                                                    | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                    |            |
| 75      |         | 214.70 | 215.55 | .85                 |                     |                  | Mudstone/<br>Siltstone  | laminated siltstone interbeds at top and in middle, coal wisps, stringers and polished carbonaceous surfaces throughout, abundant carbonaceous plant fragments throughout                                                                                                                                                                                          |            |
| 76      | 40      | 215.55 | 216.04 | .49                 |                     |                  | Sandstone               | medium dark grey, very fine grained, argillaceous ("dirty"), fines upward to thin siltstone at top, generally mottled and bioturbated, burrows, some laminated horizons, rootlets, highly broken at base with calcite lining, broken pieces, carbonaceous plant fragments throughout [overbank]                                                                    |            |
|         |         | 216.04 | 216.34 | .30                 |                     |                  | <u>LOST CORE</u>        |                                                                                                                                                                                                                                                                                                                                                                    |            |
| 76      | 10      | 216.34 | 218.23 | 1.89                |                     | 216.4            | Mudstone                | broken, sheared, very coaly pieces for 3 cm at top, abundant carbonaceous plant fragments, slightly silty in places, faint silty laminations at top and bottom appear to be contorted and nearly vertical, very tiny unoriented calcite wisps throughout (often associated with coaly or carbonaceous horizons), silty at base, some small burrows faintly visible |            |
| 77      |         | 218.23 | 218.36 | .13                 |                     |                  | Mudstone                | as above, silty                                                                                                                                                                                                                                                                                                                                                    |            |
| 77      |         | 218.36 | 219.27 | .91                 |                     | 218.5            | Mudstone                | as above, silty, calcite stringers at high angle to core axis in bottom half                                                                                                                                                                                                                                                                                       |            |
| 77      |         | 219.27 | 219.47 | .20                 |                     |                  | Siltstone/<br>Sandstone | interlaminated, calcite cemented, irregularly oriented calcite stringers and veins throughout, highly polished carbonaceous surfaces, gradational between lithologies of over/underlying units                                                                                                                                                                     |            |



| Box No. | BCA (°)        | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                             | Sample No. |
|---------|----------------|---------------|----|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                             |            |
| 77      | 5<br>10<br>25  | 219.47-220.32 |    | .85                |                    |                  | Sandstone              | near vertical, siltstone interlamination, coal stringers, medium light grey, to fine upper grain size, argillaceous, rootlets, some mottled and bioturbated horizons, calcite veins are perpendicular to core axis, broken in middle, dips shallow a bit towards base (BCA of 25 near base) |            |
|         |                | 220.32-220.52 |    | .20                |                    |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                             |            |
| 77      |                | 220.52-220.56 |    | .04                |                    |                  | Coaly Mudstone/Coal    | powder and small pieces, coal is dull                                                                                                                                                                                                                                                       |            |
|         |                | 220.56-220.68 |    | .12                |                    |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                             |            |
| 77      |                | 220.68-220.91 |    | .23                |                    |                  | Sandstone              | as before, highly broken, sandstone is slightly carbonaceous, calcite wisps at high angle to core axis                                                                                                                                                                                      |            |
| 78      |                | 220.91-221.13 |    | .22                |                    |                  | Sandstone              | as above, highly broken at base                                                                                                                                                                                                                                                             |            |
| 78      | 35<br>20<br>23 | 221.13-222.28 |    | 1.15               |                    | 221.3            | Sandstone              | as above, BCA's vary throughout the unit, they steepen downward, calcite veins and open fractures nearly perpendicular to bedding, silty and carbonaceous near base, moderately broken                                                                                                      |            |
| 78      |                | 222.28-222.89 |    | .61                |                    |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                             |            |
| 78      |                | 222.89-223.07 |    | .18                |                    |                  | Coal                   | powder, dull                                                                                                                                                                                                                                                                                |            |
|         |                | 223.07-223.12 |    | .05                |                    |                  | Carbonaceous Siltstone |                                                                                                                                                                                                                                                                                             |            |
|         |                | 223.12-223.22 |    | .10                |                    |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                            | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                            |            |
| 78      | 55      | 223.22 | 223.86 | .64                 |                     | 223.4            | Silty Mudstone         | carbonaceous and coaly plant fragments throughout, coal wisps and stringers throughout, silty and mottled at base, dips have flattened out again (possible fault or zone of shearing in coal above)                                                                                                                        |            |
| 79      |         | 223.86 | 224.29 | .43                 |                     |                  | Muddy Siltstone        | gradational with overlying unit, coaly and carbonaceous plant fragments, coal wisps and stringers, polished carbonaceous surfaces                                                                                                                                                                                          |            |
| 79      |         | 224.29 | 224.51 | .22                 |                     | 224.6            | Muddy Siltstone        | as above, gradational lower contact                                                                                                                                                                                                                                                                                        |            |
| 79      |         | 224.51 | 224.80 | .29                 |                     |                  | Sandstone              | siltstone interlaminations, medium light grey, to fine upper grain size, argillaceous, "dirty", carbonaceous stringers [overbank]                                                                                                                                                                                          |            |
|         |         | 224.80 | 225.07 | .27                 |                     |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                                                            |            |
| 79      | 60      | 225.07 | 226.73 | 1.66                |                     |                  | Mudstone               | carbonaceous and broken at top, gets siltier towards base, crackly fracture and broken at base, carbonaceous plant fragments throughout, highly polished carbonaceous surfaces near top, some faint silty laminations near bottom; silty, bioturbated, and churned near bottom, some coal stringers throughout [backswamp] |            |
|         |         | 226.73 | 226.83 | .10                 |                     |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                                                            |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                           |            |
| 80      | 55      | 226.83 | 227.47 | .64                |                    | 227.7            | Siltstone              | medium grey, grades from mudstone at top, sandy interbeds, occasional carbonaceous plant fragments, coal wisps, slickensides, polished surfaces                                                                                                                                                                           |            |
| 80      |         | 227.47 | 227.84 | .37                |                    |                  | Siltstone              | as above, carbonaceous and muddy at base                                                                                                                                                                                                                                                                                  |            |
| 80      | 60      | 227.84 | 227.97 | .13                |                    |                  | Argillaceous Sandstone | with coaly stringers, and carbonaceous plant fragments, very muddy with light grey fine grained sand grains, 2 cm thick dull coal band at top, polished slicked surface on contact with siltstone above and coal seam at base, coaly mudstone (last 2 cm at base), contact with coal appears to be true i.e. no lost core |            |
| 80      |         | 227.97 | 228.15 | .18                |                    |                  | Coal                   | dull lustrous, hard, good stick, tiny rare mudstone clasts, shear planes                                                                                                                                                                                                                                                  |            |
| 80      |         | 228.15 | 228.19 | .04                |                    |                  | Coal                   | dull lustrous, hard broken pieces, with one larger 8 cm piece                                                                                                                                                                                                                                                             |            |
| 80      |         | 228.19 | 228.23 | .04                |                    |                  | Coal                   | dull and bright, hard                                                                                                                                                                                                                                                                                                     |            |
| 80      |         | 228.23 | 228.27 | .04                |                    |                  | Coal                   | bright banded, broken at top, part of good stick, grainy texture starts in last 1 cm                                                                                                                                                                                                                                      |            |
|         |         |        |        |                    |                    |                  | Sample                 | <u>sample 5, ply 1 227.97-228.27</u>                                                                                                                                                                                                                                                                                      |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                      | Sample No.  |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                      |             |
| 80      | 60      | 228.27 | 228.36 | .09                 |                     |                  | Coal                   | dull banded, hard, good stick, grainy texture, with sand size hard brown grains, bright bands do not seem to have grain size fragments in them, top 2 cm coal is brighter, lower 7 cm seem to have more grains, and dull muddy layers with abundant brown grains, distinctly layered | BULK<br>MAC |
| 80      |         | 228.36 | 228.46 | .10                 |                     |                  | Coal                   | dull banded, hard with brown grains, distinct dull layers - with brown dull bands - muddy looking, good stick                                                                                                                                                                        |             |
|         |         |        |        |                     |                     |                  | Sample                 | <u>sample 5 ply 2 228.27-228.46</u>                                                                                                                                                                                                                                                  |             |
| 80      |         | 228.46 | 228.50 | .04                 |                     |                  | Coal                   | bright banded - no grains or brown streak, hard, good stick, good coal!                                                                                                                                                                                                              |             |
| 80      |         | 228.50 | 228.66 | .16                 |                     |                  | Coal                   | dull lustrous - no grains or brown streak, hard, good stick, good coal!                                                                                                                                                                                                              |             |
| 80      |         | 228.66 | 228.70 | .04                 |                     |                  | Coal                   | dull lustrous, hard                                                                                                                                                                                                                                                                  |             |
| 80      |         | 228.70 | 228.72 | .02                 |                     |                  | Coal                   | bright                                                                                                                                                                                                                                                                               |             |
| 80      |         | 228.72 | 228.80 | .08                 |                     |                  | Coal                   | dull lustrous, hard                                                                                                                                                                                                                                                                  |             |
| 80      |         | 228.80 | 228.87 | .07                 |                     |                  | Coal                   | dull lustrous, hard, 2 pieces and the rest powder, shear planes                                                                                                                                                                                                                      |             |
| 80      |         | 228.87 | 229.07 | .20                 |                     |                  | <u>LOST COAL</u>       |                                                                                                                                                                                                                                                                                      |             |
| 80      |         | 229.07 | 229.13 | .06                 |                     |                  | Coal                   | dull, hard, broken pieces                                                                                                                                                                                                                                                            | VIT20       |
| 80      |         | 229.13 | 229.17 | .04                 |                     |                  | Coal                   | dull lustrous, hard shear planes                                                                                                                                                                                                                                                     |             |
| 80      |         | 229.17 | 229.20 | .03                 |                     |                  | Coal                   | powder and pieces                                                                                                                                                                                                                                                                    |             |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION     |                                                                                                                                                                                                       | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                       | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                       |            |
| 80      |         | 229.20 | 229.24 | .04                |                    |                  | Coal                       | dull and bright, shear planes                                                                                                                                                                         |            |
| 80      |         | 229.24 | 229.31 | .07                |                    |                  | Coal                       | dull lustrous hard, fusain stringers                                                                                                                                                                  |            |
| 80      |         | 229.31 | 229.34 | .03                |                    |                  | Coal                       | powder and pieces, bright pieces                                                                                                                                                                      |            |
| 80      |         | 229.34 | 229.39 | .05                |                    |                  | Coal                       | bright banded, soft                                                                                                                                                                                   |            |
|         |         | 229.39 | 229.64 | .25                |                    |                  | <u>LOST COAL</u><br>Sample | <u>sample 5, ply 3 228.46-229.64</u>                                                                                                                                                                  |            |
| 80      |         | 229.64 | 229.79 | .15                |                    |                  | Coal                       | dull and bright, hard 2 cm bright band at top, not as grainy as lower portion bands up to 1 cm thick of brown grains, dull, looks like mudstone bands are between bright bands, pyritic, brown grains |            |
|         |         | 229.79 | 229.80 | .01                |                    |                  | <u>LOST COAL</u><br>Sample | <u>sample 5, ply 4 229.64-229.80</u>                                                                                                                                                                  |            |
|         |         | 229.80 | 229.90 | .10                |                    |                  | <u>LOST COAL</u>           |                                                                                                                                                                                                       |            |
| 81      |         | 229.90 | 229.96 | .06                |                    |                  | Coal                       | powder, bright pieces                                                                                                                                                                                 |            |
|         |         | 229.96 | 230.02 | .06                |                    |                  | <u>LOST COAL</u><br>Sample | <u>sample 5, ply 5 229.80-230.02</u>                                                                                                                                                                  |            |
|         |         | 230.02 | 230.16 | .14                |                    |                  | <u>LOST MUDSTONE</u>       |                                                                                                                                                                                                       |            |
| 81      |         | 230.16 | 230.63 | .47                |                    |                  | Mudstone                   | dark grey, carbonaceous with bright coal stringers, highly broken at top, slickensides, polished surfaces                                                                                             |            |
| 81      |         | 230.63 | 230.89 | .26                |                    | 230.73           | Coaly Mudstone             | very coaly, polished surfaces                                                                                                                                                                         |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                |            |
| 81      |         | 230.89 | 230.93 | .04                |                    |                  | Coal                   | dull, hard                                                                                                                                                                     |            |
| 81      |         | 230.93 | 230.98 | .05                |                    |                  | Coaly Mudstone         | very coaly with discontinuous ash band (2 cm thick)                                                                                                                            |            |
| 81      |         | 230.98 | 232.08 | 1.10               |                    |                  | Mudstone               | dark grey carbonaceous plant fragments, decrease towards middle, increase just before coal at base, slickensides, coal stringers throughout, true contact with coal seam below |            |
| 81      |         | 232.08 | 232.14 | .06                |                    |                  | Coal                   | 1 cm bright band, 1 cm thick mudstone band at top then dull coal with bright pods and mudstone clasts                                                                          |            |
| 81      |         | 232.14 | 232.16 | .02                |                    |                  | Coal                   | dull, hard                                                                                                                                                                     |            |
| 81      |         | 232.16 | 232.22 | .06                |                    |                  | Coal                   | dull banded, sheared                                                                                                                                                           |            |
| 81      |         | 232.22 | 232.43 | .21                |                    |                  | Coal                   | dull lustrous, hard in top 10 cm, dull banded in lower half, not as hard, polished surfaces, sheared                                                                           |            |
|         |         | 232.43 | 232.47 | .04                |                    |                  | <u>LOST COAL</u>       |                                                                                                                                                                                |            |
|         |         |        |        |                    |                    |                  | Sample                 | <u>sample 6, ply 1</u> 232.08-232.47 m                                                                                                                                         |            |
|         |         | 232.47 | 232.55 | .08                |                    |                  | <u>LOST MUDSTONE</u>   |                                                                                                                                                                                |            |
| 81      |         | 232.55 | 232.60 | .05                |                    |                  | Coal                   | broken pieces of dull coal mixed with some highly polished, rounded mudstone pieces                                                                                            |            |
| 82      |         | 232.60 | 232.65 | .05                |                    |                  | Mudstone               | powdered, sheared mudstone in soft lump                                                                                                                                        |            |
|         |         |        |        |                    |                    |                  | Sample                 | <u>sample 6, ply 2</u> 232.47-232.65                                                                                                                                           |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                               | Sample No.  |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------|-------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)               |             |
| 82      |         | 232.65 | 232.73 | .08                |                    |                  | Coal                   | dull, hard, shear planes                                      |             |
| 82      |         | 232.73 | 232.78 | .05                |                    |                  | Coal                   | dull and bright, shear planes, hard                           |             |
| 82      |         | 232.78 | 232.82 | .04                |                    |                  | Coal                   | dull and bright pieces, broken pieces and powder              |             |
| 82      |         | 232.82 | 232.88 | .06                |                    |                  | Coal                   | dull and bright, hard shear pieces                            |             |
| 82      |         | 232.88 | 232.97 | .09                |                    |                  | Coal                   | powder and pieces, dull lustrous pieces, fusain, shear planes |             |
| 82      |         | 232.97 | 233.16 | .19                |                    |                  | <u>LOST COAL</u>       |                                                               |             |
| 82      |         | 233.16 | 233.27 | .11                |                    |                  | Coal                   | dull lustrous, one solid piece and powder                     |             |
| 82      |         | 233.27 | 233.28 | .01                |                    |                  | Coal                   | Stone - hard                                                  |             |
|         |         |        |        |                    |                    |                  | Sample                 | <u>sample 6, ply 3</u> 232.65-233.28                          | Bulk Mac. ✓ |
| 82      |         | 233.28 | 233.32 | .04                |                    |                  | Tuff Band              | soft, dark grey, micaceous, coal fragments, coal stringers    | Kilby Esso  |
| 82      |         | 233.32 | 233.36 | .04                |                    |                  | Coal                   | dull, hard                                                    |             |
| 82      |         | 233.36 | 233.50 | .14                |                    |                  | Tuff Band              | soft, dark grey, micaceous, plant fragments, coal stringers   | Kilby Esso  |
|         |         |        |        |                    |                    |                  | Sample                 | <u>sample 6, ply 4</u> , 233.28-233.50                        | Bulk Mac. ✓ |
| 82      |         | 233.50 | 233.57 | .07                |                    | 233.78           | <u>LOST COAL</u>       |                                                               |             |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION     |                                                                                                                                                        | Sample No.                |
|---------|---------|--------|--------|--------------------|--------------------|------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
|         |         | From   | To     |                    |                    |                  | MAIN                       | Amplified (Include Coal Recovery for Each Seam)                                                                                                        |                           |
| 82      |         | 233.57 | 233.65 | .08                |                    |                  | Coal                       | dull lustrous, hard, shear planes                                                                                                                      | VIT21 ✓<br><br>Bulk Mac ✓ |
| 82      |         | 233.65 | 233.68 | .03                |                    |                  | Coal                       | bright banded, sheared                                                                                                                                 |                           |
| 82      |         | 233.68 | 233.81 | .13                |                    |                  | Coal                       | bright banded pieces - grouped, shear planes beautiful                                                                                                 |                           |
| 82      |         | 233.81 | 233.85 | .04                |                    |                  | Coal                       | bright, broken sheared                                                                                                                                 |                           |
| 82      |         | 233.85 | 233.90 | .05                |                    |                  | <u>LOST COAL</u><br>Sample | <u>sample 6, ply 5</u> 233.50-233.90                                                                                                                   |                           |
| 82      |         | 233.90 | 233.97 | .07                |                    |                  | Coaly Mudstone             | bright coal bands                                                                                                                                      |                           |
| 82      |         | 233.97 | 233.98 | .01                |                    |                  | Coal                       | stoney                                                                                                                                                 |                           |
| 82      |         | 233.98 | 234.01 | .03                |                    |                  | Coal                       | bright                                                                                                                                                 |                           |
| 82      |         | 234.01 | 234.11 | .10                |                    |                  | Coaly Mudstone             | bright coal bands and stringers, extremely coaly - polished surfaces                                                                                   |                           |
| 82      |         | 234.11 | 234.13 | .02                |                    |                  | Coal                       | bright, sheared                                                                                                                                        |                           |
| 82      |         | 234.13 | 234.18 | .05                |                    |                  | Coaly Mudstone             | broken, bright coal bands and stringers                                                                                                                |                           |
| 82      |         | 234.18 | 234.24 | .06                |                    |                  | <u>LOST CORE</u>           |                                                                                                                                                        |                           |
| 82      |         | 234.24 | 234.29 | .05                |                    |                  | Coal/Mudstone              | powder and pieces, heavily sheared, some coal has 1 cm thick/dull lustrous bands                                                                       |                           |
| 82      |         | 234.29 | 234.36 | .07                |                    |                  | Coaly Mudstone<br>Sample   | good stick, bright coal bands, polished surfaces, bright 1 cm thick coal band at base with sandstone contact<br><u>sample 6, ply 6</u> 233.90-234.36 m |                           |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                     | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                     |            |
| 82      | 70      | 234.36 | 235.26 | .90                |                    |                  | Sandstone              | medium grey with dark grey and light grey laminations, mottled, cross laminations, rare plant fragments on argillaceous laminations |            |

| Box No. | BCA (°)  | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Sample No. |
|---------|----------|---------------|----|--------------------|--------------------|------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From          | To |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                       |            |
| 83      | 59<br>62 | 235.26-236.71 |    | 1.45               |                    |                  | Sandstone               | with mudstone and siltstone interlamina-<br>tions throughout, sandstone is very<br>fine grained, argillaceous and medium<br>grey, there is a 7 cm thick coaly<br>mudstone interbed 14 cm from top of<br>the unit, generally the sandstone is<br>laminated but some horizons are heavily<br>bioturbated with abundant burrows,<br>occasional carbonaceous interlamina-<br>tions and zones containing carbonaceous<br>plant fragments [upper point bar] |            |
|         |          | 236.71-236.91 |    | .20                |                    |                  | LOST CORE               |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |
| 83      | 62       | 236.91-238.15 |    | 1.24               |                    | 236.83           | Sandstone/<br>Siltstone | as above, 30 cm thick siltstone interbed<br>at top with very thin siltstone inter-<br>beds throughout, gradational with units<br>above and below                                                                                                                                                                                                                                                                                                      |            |
| 84      | 54<br>58 | 238.15-238.78 |    | .63                |                    |                  | Siltstone               | with sandstone interlamina-<br>tions and a very thin cross-laminated<br>sandstone interbed in the center of the<br>unit, calcite wisps parallel to bedding,<br>highly bioturbated [upper point bar]                                                                                                                                                                                                                                                   |            |
| 84      |          | 238.78-239.60 |    | .82                |                    |                  | Mudstone                | 20 cm thick siltstone interbed near top,<br>3 cm thick very coaly zone (46 cm from<br>top of unit), coal stringers, polished<br>surfaces                                                                                                                                                                                                                                                                                                              |            |
| 84      |          | 239.60-239.84 |    | .24                |                    |                  | Siltstone               | rare carbonaceous plant fossils, mottled<br>and churned                                                                                                                                                                                                                                                                                                                                                                                               |            |
| 84      |          | 239.84-240.01 |    | .17                |                    | 239.87           | Siltstone               | as above                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |
|         |          | 240.01-240.18 |    | .17                |                    |                  | Lost Core               |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                            | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                            |            |
| 70      |         | 197.01-197.08 |    | .07                |                    |                  | Coal                    | dull lustrous, mudstone clasts, very hard, slickensides                                                                                    |            |
|         |         | 197.08-197.52 |    | .44                |                    |                  | <u>Lost Coal</u>        |                                                                                                                                            |            |
| 70      |         | 197.52-197.65 |    | .13                |                    |                  | Coal                    | powder and pieces, sheared, pieces are dull banded                                                                                         |            |
| 70      |         | 197.65-197.68 |    | .03                |                    |                  | Coal                    | dull and bright, fusain stringers                                                                                                          |            |
| 70      |         | 197.68-197.73 |    | .05                |                    |                  | Coal                    | powder and pieces, sheared                                                                                                                 |            |
| 70      |         | 197.73-197.80 |    | .07                |                    |                  | Coal                    | dull lustrous, two pieces of stick, sheared, fusain clasts                                                                                 |            |
| 70      |         | 197.80-197.88 |    | .08                |                    |                  | Coal                    | powder and pieces                                                                                                                          |            |
|         |         | 197.88-198.01 |    | .13                |                    |                  | <u>Lost Coal Sample</u> | sample 4, ply 1 <sup>197.9*</sup> 196.78-198.01                                                                                            | Bulk Mac.  |
| 70      |         | 198.01-198.09 |    | .08                |                    |                  | Coal                    | dull banded, hard, grainy, sugary texture, brown streak, brown hard grains as before, pyritic                                              |            |
| 70      |         | 198.09-198.16 |    | .07                |                    |                  | Coal Sample             | as above, but also thin clasts or stringers of hard brown material sample 4, ply 2 <sup>198.01</sup> 198.16 plus grainy texture coal below | Bulk Mac.  |
| 70      |         | 198.16-198.21 |    | .05                |                    |                  | Coal                    | powder <sup>197.9*</sup> 4 PLY 2, 3, & 4                                                                                                   |            |

\* due to lost coal 197.88-198.01

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                | Sample No.  |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                |             |
| 70      |         |               |    |                     |                     | 198.73           |                        |                                                                                                                                                                                                                |             |
| 70      |         | 198.21-198.24 |    | .03                 |                     |                  | Coal Sample            | dull, polished surfaces on ends<br>sample 4, ply 3 <u>198.16-198.24</u> plus coal below                                                                                                                        | Bulk Mac. ✓ |
| 70      |         | 198.24-198.91 |    | .67                 |                     |                  | <u>Lost Coal</u>       | may have been similar coal to ply 3                                                                                                                                                                            |             |
| 70      |         | 198.91-199.01 |    | .10                 |                     |                  | Coal                   | dull lustrous, grainy, sugary texture, hard, but not as hard and not as many brown grains as previous                                                                                                          |             |
| 70      |         | 199.01-199.08 |    | .07                 |                     |                  | Coal                   | dull at top, dull lustrous at bottom, grainy and hard with brown specks as above                                                                                                                               |             |
| 70      |         | 199.08-199.33 |    | .25                 |                     |                  | Coal Sample            | one piece, sheared, grainy texture at top, decreasing at base, soft crispy coal at base, but sheared, may have been dull banded/lustrous, bright band (2 cm) near base<br><u>sample 4, ply 2</u> 198.91-199.33 | Bulk Mac. ✓ |
| 70      |         | 199.33-199.39 |    | .06                 |                     |                  | Coal                   | dull lustrous, hard, sheared                                                                                                                                                                                   |             |
| 70      |         | 199.39-199.42 |    | .03                 |                     |                  | Coal                   | dull lustrous, sheared, soft, polished surfaces                                                                                                                                                                |             |
|         |         | 199.42-199.74 |    | .32                 |                     |                  | <u>Lost Coal</u>       |                                                                                                                                                                                                                |             |
|         |         | 199.74-199.76 |    | .02                 |                     |                  | Coal                   | dull                                                                                                                                                                                                           |             |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION       |                                                                                                                                                                                                                                                                                                                                                                                                        | Sample No.              |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
|         |         | From   | To     |                     |                     |                  | MAIN                         | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                        |                         |
| 70      |         | 199.76 | 199.79 | .03                 |                     |                  | Coal Sample                  | dull lustrous sample 4, ply 3 199.33-199.79                                                                                                                                                                                                                                                                                                                                                            | Bulk Mac.               |
| 70      | 45      | 199.79 | 199.84 | .05                 |                     |                  | Coaly Mudstone               | very coaly with 3 mm thick ash band                                                                                                                                                                                                                                                                                                                                                                    |                         |
| 70      |         | 199.84 | 199.89 | .05                 |                     |                  | <u>Lost Core Sample</u>      | mudstone sample 4, ply 4 199.79-199.89                                                                                                                                                                                                                                                                                                                                                                 | Bulk Mac.               |
| 70      |         | 199.89 | 200.05 | .16                 |                     |                  | Coal                         | powder and pieces, broken, dull banded/lustrous, sheared                                                                                                                                                                                                                                                                                                                                               |                         |
| 70      |         | 200.05 | 200.14 | .09                 |                     |                  | <u>Lost Coal Sample</u>      | sample 4, ply 3 199.89-200.14                                                                                                                                                                                                                                                                                                                                                                          | Bulk Mac.               |
|         |         |        |        |                     |                     | 200.25           |                              |                                                                                                                                                                                                                                                                                                                                                                                                        |                         |
| 70      | 40      | 200.14 | 200.32 | .18                 |                     |                  | Coaly Mudstone<br><br>Sample | mudstone pieces, may be considerable core loss between some of the pieces as they do not all fit together well, 2 cm thick bright coal band, top two pieces are very coaly, in fact, mostly coal with mudstone layers, .07 m thick, highly polished surfaces, sheared, rest of mudstone not as coaly, 1 cm thick ash band in coaly mudstone, highly polished surfaces<br>sample 4, ply 4 200.14-200.32 | Vit 19<br><br>Bulk Mac. |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                               | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                               |            |
| 71      |         | 200.32 | 200.52 | .20                |                    |                  | <u>Lost Coal</u>       |                                                                                                                                                               | Bulk Mac.  |
|         |         | 200.52 | 200.72 | .20                |                    |                  | <u>Lost Core</u>       | mudstone                                                                                                                                                      |            |
|         |         | 200.72 | 200.76 | .04                |                    |                  | Coaly Mudstone Sample  | as above sample 4, ply 4 200.52-200.76                                                                                                                        |            |
|         |         | 200.76 | 200.86 | .10                |                    |                  | Coal                   | dull and bright, grainy texture, hard, mudstone clasts, not many brown grains, less brown streak, but grainy texture is still well developed, good stick core |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                         |            |
| 71      |         | 200.86 | 200.91 | .05                 |                     |                  | Coal                   | dull lustrous, grainy texture, hard, brown grains                                                                                                                                                                                                                                                                                                       |            |
| 71      |         | 200.91 | 201.01 | .10                 |                     |                  | Coal                   | stoney, hard, grainy texture with mudstone clasts and mudstone horizon 1 cm thick, bright bands, but almost everything streaks brown, broken pieces at base sample 4, ply 2 200.76-201.01                                                                                                                                                               | Bulk Mac.  |
|         |         |        |        |                     |                     |                  | Sample                 |                                                                                                                                                                                                                                                                                                                                                         |            |
| 71      |         | 201.01 | 201.07 | .06                 |                     |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                                                                                                                         |            |
| 71      |         | 201.07 | 201.13 | .06                 |                     |                  | Coaly Mudstone         | dark grey, abundant coal stringers and bands, wisps, etc.                                                                                                                                                                                                                                                                                               |            |
| 71      | 60      | 201.13 | 202.67 | 1.54                |                     |                  | Mudstone               | with sandy and silty interbeds in top half, sandstone is same as was in box 69, abundant carbonaceous plant fragments, coal stringers, rootlets, calcite fracture filling only in sandstone, bioturbation in sandstones, carbonaceous mudstone below sandstone interbeds in middle, silty towards base, polished surfaces, slickensides, broken at base |            |
|         |         |        |        |                     |                     | 202.69           |                        |                                                                                                                                                                                                                                                                                                                                                         |            |
| 71      | 60      | 202.67 | 203.31 | .64                 |                     |                  | Siltstone              | medium grey, rare plant fragments except for 5 cm thick coaly carbonaceous band in middle, dirty sandstone at base, polished surfaces, fractures, slickensides                                                                                                                                                                                          |            |

| Box No. | BCA (°)        | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                       | Sample No. |
|---------|----------------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                       |            |
| 72      | 30             | 203.31 | 205.51 | 2.20               |                    |                  | Mudstone               | dark grey, very carbonaceous with coaly wisps and stringers, encircled with stringer of calcite, becomes less carbonaceous and siltier towards base, faint laminations at base, last 10 cm abundant coal bands, coaly mudstone, polished surfaces, abundant slickensides, faint bioturbation, broken at base, broken in middle with calcite veining and small 1 cm thick brecciation, highly polished with calcite veinlets in middle |            |
| 72      |                | 205.51 | 205.57 | .06                |                    |                  | <u>LOST CORE</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |
|         |                |        |        |                    |                    | 206.04           |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |
| 72      |                | 205.57 | 205.93 | .36                |                    |                  | Mudstone               | as above, silty, bioturbation, highly polished, carbonaceous plant fragments                                                                                                                                                                                                                                                                                                                                                          |            |
| 73      | 55<br>30<br>25 | 205.93 | 208.60 | 2.67               |                    |                  | Siltstone              | dark grey, argillaceous, becomes silty mudstone in middle then grades to sandstone at base, slickensides, calcite veining in sandstone at base, bioturbations - sand filled burrows rare plant fragments, round to oblong iron concretions, BCA steepens downwards                                                                                                                                                                    |            |
| 74      |                | 208.60 | 209.10 | .50                |                    | 209.10           | Sandstone              | medium grey, fine grained, abundant calcite veining and fracturing, more than one stage of fracturing as calcite veins are truncated by pieces of sandstone which have moved vertically along well polished surfaces, grades to silty mudstone at base,                                                                                                                                                                               |            |



| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                          | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |
| 74      |         | 209.10-210.20 |    | 1.10                |                     |                  | Siltstone                     | <p>part of fining upward sequence but no other features as to channel etc.,</p> <p>BCA's near vertical, carbonaceous plant fragments on argillaceous laminations</p> <p>Boxes 72-79 almost completely mudstone intervals with thin sandstone interbeds in almost every box at base of fining upward sequences, all grade from sandstone → siltstone → carbonaceous mudstone more or less, plus or minus coal at top of small cyclothem.</p> <p>cyclothem over all poorly developed as the sequence is mud dominated, sands may just be flood stage of stream into swamp</p> <p>medium dark grey, coal wisps, coal stringer, abundant polished carbonaceous surfaces throughout, calcite lined near vertical joint surface sub-parallel to core axis, calcite stringers at high angle to core axis near base, carbonaceous and coaly plant fragments, bottom half is moderately broken</p> |            |
| 74      |         | 210.20-210.23 |    | .03                 |                     |                  | Sheared Siltstone/coal powder | powder and small pieces, siltstone pieces have very highly polished carbonaceous surfaces                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
|         |         | 210.23-210.77 |    | .54                 |                     |                  | <u>LOST CORE</u>              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                       | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                       |            |
| 57      |         | 160.76-160.78 |    | .02                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                                       |            |
|         |         | 160.78-162.36 |    | 1.58               |                    |                  | Mudstone               |                                                                                                                                                                                                                                                                       |            |
| 57      | 72      | 162.36-162.81 |    | .45                |                    | 162.45           | Siltstone              | medium grey, grades at base to mudstone, argillaceous laminations, faint sparse burrows, sandy layers 1 cm thick, carbonaceous plant fragments                                                                                                                        |            |
| 58      | 63      | 162.81-165.32 |    | 2.51               |                    |                  | Mudstone               | dark grey, mudstone at top and bottom, light grey silty and sandstone interbed in middle, burrows in both lithologies at base, argillaceous laminations in sandstone, carbonaceous plant fragments throughout, slickensides, wispy calcite veining in mudstone at top |            |
| 58      |         | 165.32-165.47 |    | .15                |                    | 165.50           | Mudstone               | carbonaceous, dark grey, slickensides, grades to carbonaceous mudstone at base, broken                                                                                                                                                                                |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                   | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)   |            |
| 59      |         | 165.47 | 165.52 | .05                |                    |                  | <u>Lost Coal</u>       |                                                   |            |
| 59      |         | 165.52 | 165.54 | .02                |                    |                  | Coal                   | dull banded, broken                               |            |
| 59      |         | 165.54 | 165.60 | .06                |                    |                  | Coal                   | dull lustrous, good stick, sheared                |            |
| 59      |         | 165.60 | 165.68 | .08                |                    |                  | Coal                   | dull lustrous, stick, sheared                     |            |
| 59      |         | 165.68 | 165.73 | .05                |                    |                  | Coal                   | dull lustrous, heavily sheared, no fresh surfaces |            |
| 59      |         | 165.73 | 165.78 | .05                |                    |                  | Coal                   | dull banded, mudstone clasts, sheared             |            |
|         |         | 165.78 | 166.10 | .32                |                    |                  | <u>Lost Coal</u>       |                                                   |            |
| 59      |         | 166.10 | 166.16 | .06                |                    |                  | Coal                   | powder and pieces, dull and bright                |            |
| 59      |         | 166.16 | 166.26 | .10                |                    |                  | Coal                   | dull lustrous, good stick, fusain stringers       |            |
| 59      |         | 166.26 | 166.29 | .03                |                    |                  | Coal                   | dull lustrous, broken pieces                      |            |
| 59      |         | 166.29 | 166.31 | .02                |                    |                  | Coal                   | dull lustrous, broken pieces                      |            |
| 59      |         | 166.31 | 166.37 | .06                |                    |                  | Coal                   | dull lustrous, hard                               |            |
|         |         |        |        |                    |                    |                  | Sample                 | <u>sample 3, ply 1 165.47-166.37</u>              | Bulk Mac.  |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                    | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                    |            |
| 59      |         | 166.37-166.40 |    | .03                |                    | 166.7            | Coal                   | bright banded, good stick, sharp contact with dull banded, grainy coal below                                                                                                                       | VIT II ✓   |
| 59      |         | 166.4-166.52  |    | .12                |                    |                  | Coal                   | dull banded, hard but has brown streak from siderite, small grains make rough, grainy texture, but original banding is still evident, lower 5 cm has calcite veining in thin 1 mm horizontal bands |            |
| 59      |         | 166.52-166.60 |    | .08                |                    |                  | Coal                   | dull lustrous, good stick, hard brown streak with grainy, sugary pyritic texture, calcite veining                                                                                                  |            |
| 59      |         | 166.60-166.71 |    | .11                |                    |                  | Coal                   | dull banded, grainy texture, grains streak brown, hard                                                                                                                                             | Bulk Mac.  |
|         |         |               |    |                    |                    |                  | Sample                 | <u>sample 3, ply 2 166.37-166.71</u>                                                                                                                                                               | ✓          |
| 59      |         | 166.71-166.75 |    | .04                |                    |                  | Coal                   | dull banded, sheared, no grainy texture or calcite veining                                                                                                                                         |            |
|         |         | 166.75-167.30 |    | .55                |                    |                  | <u>Lost Coal</u>       |                                                                                                                                                                                                    |            |
| 59      | 65      | 167.30-167.40 |    | .10                |                    |                  | Carbonaceous Mudstone  | coal stringers, abundant slickensides, polished surfaces, coaly mudstone, broken, especially ground at base                                                                                        |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                               | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                               |            |
| 59      |         | 167.40-167.57 |    | .17                 |                     |                  | <u>Lost Core</u>       | coal and mudstone                                                                                                             |            |
|         |         | 167.57-167.77 |    | .20                 |                     |                  | Carbonaceous Mudstone  | as above, broken pieces                                                                                                       |            |
| 59      |         | 167.77-167.86 |    | .09                 |                     |                  | <u>Lost Coal</u>       |                                                                                                                               |            |
|         |         | 167.86-167.96 |    | .10                 |                     |                  | Coal and Mudstone      | powder and pieces of coal and coaly/carbonaceous mudstone                                                                     |            |
| 59      |         | 167.96-168.61 |    | .65                 |                     |                  | Mudstone               | dark grey, carbonaceous, coal stringers, silty and sandy laminations at base, heavily broken, polished surfaces, slickensides |            |
| 59      | 40      | 168.61-168.68 |    | .07                 |                     |                  | <u>Lost Core</u>       |                                                                                                                               |            |
|         |         | 168.68-168.83 |    | .15                 |                     | 168.85           | Sandstone              | light grey, fine-grained, dark grey argillaceous laminations, plant fragments, coal stringers                                 |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                         |            |
| 60      |         | 168.83 | 169.42 | .59                |                    |                  | Sandstone              | as above, dark grey argillaceous laminations, light grey sandstone, carbonaceous plant fragments, coaly stringers, contorted bedding, (water escape?), bioturbation, grades quickly to mudstone at base |            |
| 60      |         | 169.42 | 171.72 | 2.30               |                    |                  | Mudstone               | dark grey, carbonaceous, 10 cm coaly mudstone near top grades to silty mudstone in middle and back to carbonaceous mudstone at base, slickensides, coal stringers, faint burrows and bioturbation       |            |
| 61      |         |        |        |                    |                    | 172.2            |                        |                                                                                                                                                                                                         |            |
| 61      |         | 171.72 | 171.84 | .12                |                    |                  | <u>Lost Coal</u>       |                                                                                                                                                                                                         |            |
| 61      |         | 171.84 | 171.98 | .14                |                    |                  | Coal                   | dull banded, hard, good stick                                                                                                                                                                           |            |
| 61      |         | 171.98 | 172.02 | .04                |                    |                  | Coal                   | broken rounded pieces, bright banded                                                                                                                                                                    |            |
| 61      |         | 172.02 | 172.07 | .05                |                    |                  | Coal                   | two pieces, dull and bright                                                                                                                                                                             |            |
| 61      |         | 172.07 | 172.12 | .05                |                    |                  | Coal                   | bright banded, hard                                                                                                                                                                                     |            |
| 61      |         | 172.12 | 172.17 | .05                |                    |                  | Coal                   | bright, hard                                                                                                                                                                                            | Vit 10 ✓   |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                     | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                     |            |
| 61      |         | 172.17 | 172.23 | .06                |                    |                  | Coal                   | dull banded, hard                                                                                                                                                                                                                                                                   |            |
| 61      |         | 172.23 | 172.27 | .04                |                    |                  | Coal                   | cannel coal, with bright bands, extremely hard, heavier than coal                                                                                                                                                                                                                   |            |
|         |         | 172.27 | 172.57 | .30                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                                                     |            |
| 61      |         | 172.57 | 174.55 | 1.98               |                    |                  | Mudstone               | dark grey, carbonaceous mudstone at top, ground piece at top, not good contact with coal, very carbonaceous with coaly bands throughout, polished surfaces, slickensides                                                                                                            |            |
| 62      |         | 174.55 | 174.72 | .17                |                    |                  | Mudstone               | as above                                                                                                                                                                                                                                                                            |            |
|         |         |        |        |                    |                    | 175.26           |                        |                                                                                                                                                                                                                                                                                     |            |
| 62      | 65      | 174.72 | 177.10 | 2.38               |                    |                  | Mudstone               | as above, sandy interbed at top 30 cm thick, bioturbated, sharp contact at top and bottom, mudstone continues to be carbonaceous with wispy coal stringers, polished surfaces, calcite fracture filling parallel to bedding, silty in lower third, calcite fracture filling at base |            |
| 63      |         | 177.10 | 177.70 | .60                |                    |                  | Mudstone               | as above, calcite fracture filling, minor brecciation in first 12 cm, then brown and powdered for 4 cm, very carbonaceous mudstone as in previous box                                                                                                                               |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                               | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                               |            |
| 63      |         | 177.70 | 177.90 | .20                |                    | 178.61           | <u>Lost Core</u>       |                                                                                                                                                                                                                                                               | V15A       |
| 63      |         | 177.90 | 180.0  |                    |                    | 2.10             | Mudstone               | dark grey, carbonaceous, as above, slicks, coal stringers and bands, 7 cm thick dull coal band 56 cm from base, light, 9 cm thick sandstone interbed 5 cm above coal band                                                                                     |            |
| 64      | 75      | 180.0  | 180.94 | .94                |                    |                  | NOTE:<br>Mudstone      | boxes 64-67 contain a fault zone<br>medium dark grey, silty, abundant plant fragments, calcite fracture filling at top, fracture approximately 20° BCA with minor breccia in fracture, faint silty laminations, slickensides, gradational to mudstone at base |            |
| 64      | 70      | 180.94 | 182.0  | 1.06               |                    | 181.66           | Mudstone               | dark grey, silty at top, becomes more carbonaceous towards base, coal stringers (numerous), slickensides, polished surfaces, calcite veining/breccia for 10 cm in middle, extremely broken at base, powdered                                                  |            |
|         |         | 182.0  | 182.26 | .26                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                               |            |
| 64      |         | 182.26 | 182.65 | .39                |                    | 182.88           | Mudstone               | as above, dark grey, carbonaceous, polished surfaces                                                                                                                                                                                                          |            |
|         |         | 182.65 | 182.80 | .15                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                               |            |



| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 65      |         | 182.80-184.0  |    | 1.2                |                    |                  | Siltstone              | medium grey, heavily sheared and slickensides with prolific polished surfaces, calcite fractures shows numerous heal and fracture stages, grades to mudstone in lower 40 cm, slivered vertically with pieces polished on all sides, carbonaceous, dark grey, broken vertically, vertical calcite fracture contains sandstone slice with fracture zone in siltstone, BCA's are indistinct but carbonaceous stringers and natural breaks are at approximately 45° |            |
|         |         | 184.0-184.20  |    | .20                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
|         |         | 184.20-184.50 |    | .30                |                    |                  | <u>Lost Coal</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 65      |         | 184.50-184.70 |    | .20                |                    |                  | Coal                   | powder and pieces, heavily sheared, some mudstone pieces mixed in with coal though these are rare                                                                                                                                                                                                                                                                                                                                                               | Vit 16 ✓   |
| 65      |         | 184.70-184.85 |    | .15                |                    |                  | Mudstone               | heavily broken, heavily slicked, rare plant fragments, silty                                                                                                                                                                                                                                                                                                                                                                                                    |            |
|         |         | 184.85-184.92 |    | .07                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |            |
| 65      |         | 184.92-185.12 |    | .20                |                    | 185.0            | Mudstone               | as above, slivered, polished surfaces, heavily broken, broken lost core from previous unit                                                                                                                                                                                                                                                                                                                                                                      |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                |            |
| 65      | 12      | 185.12 | 185.82 | .70                 |                     |                  | Sandstone              | light grey, well laminated, very fine to fine-grained, abundant calcite fracture fill, polished surfaces, slight bioturbation, almost vertical bedding                                                                                                                                                                                                                                                                         |            |
| 66      | 20-10   | 185.82 | 187.14 | 1.32                |                     |                  | Sandstone              | as above, oblique and horizontal calcite veining through sandstone unit, some laminations, bioturbations, heavily veined at top, silty in lower half along vertical bed, argillaceous in upper half along lamination<br><br>continuous core                                                                                                                                                                                    |            |
| 66      |         | 187.14 | 187.68 | .54                 |                     |                  | Sandstone              | sharp contact with previous unit along calcite vein, light grey, fine to upper fine grained sandstone, distinct break from units above and below and bounded by calcite veins<br><br>heavy calcite veining, vertical polished surfaces, more than one stage of fracture and healing<br><br>sharp angles on large sandstone fragments healed together, and refractured, i.e., clasts of sandstone with calcite fracture filling |            |
| 66      |         | 187.68 | 188.41 | .73                 |                     | 188.06           | Sandstone              | as above, broken in middle along polished surfaces and down length of core                                                                                                                                                                                                                                                                                                                                                     |            |
| 67      |         | 188.41 | 188.47 | .06                 |                     |                  | Sandstone              | as above, breccia with sandstone fragments, angular pieces, sharp contact along calcite vein with mudstone unit below                                                                                                                                                                                                                                                                                                          |            |

| Box No. | BCA (°)  | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                      | Sample No. |
|---------|----------|--------|--------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |          | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                      |            |
| 67      |          | 188.47 | 190.55 | 2.08               |                    |                  | Mudstone               | dark grey, no laminations, calcite veining (minor), heavily slicked with numerous polished surfaces, rare plant fragments, heavily broken and polished last 18 cm, concretions (small), brown grey bands in mudstone |            |
|         |          |        |        |                    |                    | 190.80           |                        |                                                                                                                                                                                                                      |            |
| 67      | (40)     | 190.55 | 191.07 | .52                |                    |                  | Mudstone               | as above, wispy calcite veining, concretions begin forming bands, carbonaceous plant fragments increase in number                                                                                                    |            |
| 68      | 63<br>75 | 191.07 | 192.52 | 1.45               |                    |                  | Mudstone               | dark grey, faint laminations, sparse calcite fractures, rare plant fragments, polished surfaces                                                                                                                      |            |
| 68      |          | 192.52 | 192.74 | .22                |                    |                  | Carbonaceous Mudstone  | very carbonaceous, 3 cm thick dull coal band 10 cm from top, sheared and broken, soft                                                                                                                                | Vit 17 ✓   |
|         |          | 192.74 | 192.82 | .08                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                      |            |
| 68      | 55<br>50 | 192.82 | 193.72 | .90                |                    |                  | Sandstone              | light grey, well laminated, fine to upper fine-grained, plant fragments, rootlets, gradational from carbonaceous mudstone through to siltstone in top 30 cm, bioturbation, coaly stringers                           |            |
|         |          |        |        |                    |                    | 193.85           |                        |                                                                                                                                                                                                                      |            |

| Box No. | BCA (°)        | Depth         |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                          | Sample No. |
|---------|----------------|---------------|--------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |                | From          | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                          |            |
| 68      |                | 193.72        | 193.88 | .16                |                    |                  | Sandstone              | as above                                                                                                                                                                                                                                                                                 |            |
| 69      | 42<br>50<br>55 | 193.88        | 195.95 | 2.07               |                    |                  | Sandstone              | as above, well laminated with silts and muds and sands varying in grain size from very fine to fine upper, carbonaceous plant fragments and rootlets, bioturbation, mottling, occasional calcite veinlet perpendicular to bedding, large sand-filled burrows, grades to mudstone at base |            |
| 69      | 47<br>42       | 195.95        | 196.66 | .71                |                    |                  | Mudstone               | dark grey, no black fragments in top, becomes darker grey with plant fragments in middle, easily broken into rubble when touched, sandy interbed at base, mottled, rootlets                                                                                                              |            |
| 70      |                | 196.66        | 196.78 | .12                |                    |                  | Mudstone               | dark grey, as above                                                                                                                                                                                                                                                                      |            |
|         |                |               |        |                    |                    | 196.90           |                        |                                                                                                                                                                                                                                                                                          |            |
| 70      |                | <u>196.78</u> | 196.86 | .08                |                    |                  | <u>Lost Coal</u>       |                                                                                                                                                                                                                                                                                          |            |
| 70      |                | 196.86        | 197.01 | .15                |                    |                  | Coal                   | mostly dull lustrous, broken and ground pieces, some larger pieces .05 m long, one ground piece of hard dull coal, one bright banded, sheared                                                                                                                                            | Vit 18 ✓   |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                   | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                   |            |
| 36      |         | 101.85 | 102.25 | .4                  |                     |                  | Mudstone               | as above                                                                                                                                                                                                                                          |            |
| 37      |         | 102.25 | 102.68 | .43                 |                     |                  | Mudstone               | grades to siltstone at base, as above, no carbonaceous plant fragments                                                                                                                                                                            |            |
| 37      |         | 102.68 | 103.23 | .55                 |                     |                  | Siltstone              | monotonous, homogenous, no plant fragments, no laminations                                                                                                                                                                                        |            |
| 37      |         | 103.23 | 104.97 | 1.74                |                     |                  | Sandy Siltstone        | light grey, concretion at top for 8 cm, rare plant fragments at top, slicken-sides featureless towards base, concretion at base for 8 cm, grades to argillaceous siltstone at base, fairly homogeneous, no distinguishing features or laminations |            |
| 38      | 60°     | 104.97 | 107.77 | 2.8                 |                     | 105.8            | Mudstone               | slightly silty, medium dark grey, occasional bright coal bands and stringers up to 5 mm thick, faint bioturbation and mottling, very faint laminations, irregular fracture when broken.                                                           |            |
| 39      |         | 107.77 | 108.17 | .4                  |                     |                  | Mudstone               | as above, especially silty towards base                                                                                                                                                                                                           |            |
| 39      |         | 108.17 | 110.57 | 2.4                 |                     | 108.8            | Siltstone              | medium grey, homogeneous, no laminations, faint mottling, bioturbation at base                                                                                                                                                                    |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                       | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                       |            |
| 40      |         | 110.57 | 111.19 | .62                 |                     |                  | Siltstone              | as above, medium grey, faint mottling, bioturbation                                                                                                                                                                                                                                   |            |
| 40      | 72°     | 111.19 | 113.27 | 2.08                |                     | 111.9            | Siltstone              | medium grey, argillaceous laminations near base, faint mottling and bioturbation, slightly sandy at top, rare carbonaceous plant fragments, slickensides and minor fractures                                                                                                          |            |
| 41      | 72°     | 113.27 | 114.26 | .99                 |                     |                  | Siltstone              | medium grey as above but obvious mottled and bioturbated, faint argillaceous laminations                                                                                                                                                                                              |            |
| 41      |         | 114.26 | 116.06 | 1.8                 |                     | 114.9            | Siltstone              | as above, distinct mottling and bioturbation, more argillaceous, grades to mudstone at base, rare carbonaceous plant fragments                                                                                                                                                        |            |
| 42      | 72°     | 116.06 | 117.38 | 1.32                |                     |                  | Mudstone               | dark grey, very irregular fractures and broken slickensides, rare carbonaceous plant fragments, large pelecypod? mold and pyrite blebs, very homogeneous for top 80 cm, grades to sandstone at base with mottling soft, sediment deformation, grades to siltstone immediately at base |            |
| 42      |         | 117.38 | 118.71 | 1.33                |                     | 118.0            | Mudstone               | grades quickly from siltstone at top, slickensides, dark grey concretion 10 cm thick in middle, homogeneous and rare plant fragments                                                                                                                                                  |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                         | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                         |            |
| 43      |         | 118.71-120.15 |    | 1.44                |                     |                  | Mudstone               | dark grey, homogeneous, rare plant fragments, at base grades to carbonaceous mudstone with coaly stringers for last 20 cm, slickensides | VIT 7 ✓    |
|         |         | 120.15-120.76 |    | .61                 |                     |                  | Lost Coal              |                                                                                                                                         |            |
| 43      |         | 120.76-120.90 |    | .14                 |                     |                  | Coal                   | dull banded, good stick, shear planes                                                                                                   |            |
| 43      |         | 120.90-120.99 |    | .09                 | 121.0               |                  | Pyrite Concretion      | very hard and heavy, small oolitic pyrite blebs, sharp contact at base with mudstone                                                    |            |
| 43      |         | 120.99-121.03 |    | .04                 |                     |                  | Carbonaceous Mudstone  | abundant coal stringers, coaly mudstone at base                                                                                         |            |
| 43      |         | 121.03-121.06 |    | .03                 |                     |                  | Coal                   | dull                                                                                                                                    |            |
| 43      |         | 121.06-121.11 |    | .05                 |                     |                  | Coal                   | hard, dull, no cleat                                                                                                                    |            |
| 43      |         | 121.11-121.15 |    | .04                 |                     |                  | Coaly Mudstone         | very light, possibly stoney, streaks brown, high percentage of bright coaly wisps                                                       |            |
| 43      |         | 121.15-121.22 |    | .07                 |                     |                  | Carbonaceous Mudstone  | broken                                                                                                                                  |            |
|         |         | 121.22-121.3  |    | .08                 |                     |                  | Lost Core              |                                                                                                                                         |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                   | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                   |            |
| 43      |         | 121.3  | 122.17 | .87                |                    |                  | Mudstone               | carbonaceous plant fragments, silty in middle, no laminations, dark grey, slickensides                                                                            |            |
| 44      |         | 122.17 | 124.03 | 1.86               |                    |                  | Mudstone               | dark grey, as above, carbonaceous plant fragments, slickensides, wispy coal stringers and pods, slickensides, very carbonaceous in places, rare faint laminations |            |
| 44      | 60°     | 124.03 | 124.8  | .77                |                    | 124.1            | Mudstone               | as above, small bands of more resistant mudstone, possibly sideritic as slightly iron stained                                                                     |            |
| 45      |         | 124.8  | 125.67 | .87                |                    |                  | Mudstone               | as above, more carbonaceous, carbonaceous mudstone in places                                                                                                      |            |
| 45      |         | 125.67 | 126.92 | 1.25               |                    | 125.9            | Mudstone               | as above, bioturbated with sandstone infill of burrows at base, no laminations                                                                                    |            |
| 45      |         | 126.92 | 127.23 | .31                |                    | 127.1            | Mudstone               | as above                                                                                                                                                          |            |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                         | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                         |            |
| 46      | 62°     | 127.23 | 128.05 | .82                |                    |                  | Mudstone               | dark grey, carbonaceous mudstone as above, slickensides, BCA from coal stringers and natural break of rock                                              | VIT 8 ✓    |
| 46      |         | 128.05 | 128.11 | .06                |                    |                  | Coal                   | dull with wispy calcite veining at top of seam and along contact with mudstone, appears to be top contact with mudstone, ie no lost core at top of seam |            |
| 46      |         | 128.11 | 128.15 | .04                |                    |                  | Coal                   | dull, hard                                                                                                                                              |            |
| 46      |         | 128.15 | 128.20 | .05                |                    |                  | Coal                   | dull banded                                                                                                                                             |            |
|         |         | 128.20 | 128.36 | .16                |                    |                  | Lost Coal              | one piece                                                                                                                                               |            |
| 46      |         | 128.36 | 128.41 | .05                |                    |                  | Coal                   | bright banded                                                                                                                                           |            |
| 46      |         | 128.41 | 128.43 | .02                |                    |                  | Coal                   | bright banded dull with mudstone clasts                                                                                                                 |            |
| 46      |         | 128.43 | 128.45 | .02                |                    |                  | Coal                   | dull banded                                                                                                                                             |            |
| 46      |         | 128.45 | 128.47 | .02                |                    |                  | Coaly Mudstone         | with bright bands in mudstone                                                                                                                           |            |
| 46      |         | 128.47 | 128.51 | .04                |                    |                  | Coaly Mudstone         | with bright bands and wispy coal stringers                                                                                                              |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                             | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                             |            |
| 46      |         | 128.51 | 129.9  | 1.39                |                     | 130.1            | Mudstone               | dark grey, carbonaceous, coal stringers, slickensides, coaly mudstone band for .04 m, sandy silty interbed 30 cm thick, plant fragments, coal stringers, laminations, mudstone is less carbonaceous below siltstone, calcite veining at base, 2 cm thick breccia perpendicular to core axis |            |
| 46      |         | 129.9  | 129.97 | .07                 |                     |                  | Mudstone               | as above, slickensides                                                                                                                                                                                                                                                                      |            |
| 47      |         | 129.97 | 130.89 | .92                 |                     |                  | Mudstone               | dark grey, carbonaceous, coal stringers, slickensides, very carbonaceous in places                                                                                                                                                                                                          |            |
| 47      |         | 130.89 | 131.15 | .26                 |                     | 131.7            | Carbonaceous Mudstone  | coaly, very carbonaceous, mostly powder, highly sheared, with abundant polished surfaces, pieces show extreme shearing and polishing, powdered mudstone at base                                                                                                                             |            |
|         |         | 131.15 | 131.32 | .17                 |                     |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                                                             |            |
| 47      |         | 131.32 | 131.41 | .09                 |                     |                  | Mudstone               | carbonaceous, highly broken, numerous polished surfaces, slickensides                                                                                                                                                                                                                       |            |
|         |         | 131.41 | 131.61 | .20                 |                     |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                                                             |            |
| 47      |         | 131.61 | 132.01 | .4                  |                     |                  | Sandstone              | medium grey, very fine grained, broken, numerous polished surfaces, slickensides, extensively fractured with calcite veining, very ground at base                                                                                                                                           |            |
|         |         | 132.01 | 132.11 | .10                 |                     |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                                                                             |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                              | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                              |            |
| 47      |         | 132.11 | 132.81 | .7                 |                    | 132.7            | Siltstone              | light sandstone with polished surfaces, slickensides, highly fractured, calcite fracture filling, grades to mudstone at base, no fresh surface, every surface appears to be slicked and/or polished, possible fault                          |            |
| 48      |         | 132.81 | 135.13 | 2.32               |                    |                  | Mudstone               | dark grey, carbonaceous, top is highly slicked, polished and very friable, coaly stringers, highly broken in places, fracturing diminishes in lower half but still polished surfaces                                                         |            |
|         |         | 135.13 | 135.33 | .20                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                              |            |
|         |         |        |        |                    |                    | 135.8            |                        |                                                                                                                                                                                                                                              |            |
| 48      |         | 135.33 | 135.61 | .28                |                    |                  | Mudstone               | as above, small concretion, still polished surfaces, slickensides but not fractured                                                                                                                                                          |            |
| 49      |         | 135.61 | 135.89 | .28                |                    |                  | Mudstone               | dark grey, very carbonaceous, coal stringers, slickensides, polished surfaces, carbonaceous mudstone in places, broken at base                                                                                                               |            |
|         |         | 135.89 | 136.09 | .20                |                    |                  | <u>Lost Core</u>       |                                                                                                                                                                                                                                              |            |
|         |         |        |        |                    |                    | 136.6            |                        |                                                                                                                                                                                                                                              |            |
| 49      | 60      | 136.09 | 138.32 | 2.23               |                    |                  | Mudstone               | very carbonaceous, very dark grey in places, has concretion area horizon in upper third (35 cm), 2 cm thick ashband at base, bioturbations abundant, coal stringers in bands, polished surfaces, slickensides, sand-filled burrows near base |            |
| 50      |         |        |        |                    |                    | 139.3            |                        |                                                                                                                                                                                                                                              |            |

| Box No. | BCA (°) | Depth         |    | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                     | Sample No. |
|---------|---------|---------------|----|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                     |            |
| 50      |         | 138.32-138.65 |    | .33                 |                     |                  | Mudstone               | dark grey, as above, no burrows, broken and powdered at base, broken contact with coal seam at base                                 | Vit 9 ✓    |
|         |         | 138.65-138.95 |    | .30                 |                     |                  | <u>Lost Core</u>       |                                                                                                                                     |            |
|         |         | 138.95-139.25 |    | .30                 |                     |                  | <u>Lost Coal</u>       |                                                                                                                                     |            |
|         |         | 139.25-139.28 |    | .03                 |                     |                  | Coal                   | dull                                                                                                                                |            |
|         |         | 139.28-139.38 |    | .10                 |                     |                  | Coal                   | dull banded, broken, small ground pieces                                                                                            |            |
|         |         | 139.38-139.45 |    | .07                 |                     |                  | Coal                   | dull banded, one piece                                                                                                              |            |
|         |         | 139.45-139.55 |    | .10                 |                     |                  | <u>Lost Coal</u>       |                                                                                                                                     |            |
| 50      | 70      | 139.55-140.06 |    | .51                 |                     |                  | Mudstone               | dark grey, very carbonaceous, carbonaceous mudstone in places, coal stringers, slickensides, polished surfaces                      |            |
|         |         | 140.06-140.43 |    | .37                 |                     |                  | Sandstone              | light medium grey, very carbonaceous, silty, abundant plant fragments, coal stringers, sandstone interbed between mudstones         |            |
| 50      |         | 140.43-141.49 |    | 1.06                |                     |                  | Mudstone               | dark grey, bright coal bands 2 cm thick, very carbonaceous, coaly mudstone at base, broken at base, polished surfaces, slickensides |            |
| 51      |         | 141.49-141.93 |    | .44                 |                     |                  | Mudstone               | as above, not as coaly or carbonaceous except top 8 cm, broken at top                                                               |            |
|         |         |               |    |                     |                     | 142.3            |                        |                                                                                                                                     |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION      |                                                                                                                                                                                                                                                         | Sample No.  |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|         |         | From   | To     |                    |                    |                  | MAIN                        | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                         |             |
| 51      |         | 141.93 | 143.34 | 1.41               |                    |                  | Mudstone                    | dark grey, carbonaceous, but not as carbonaceous as previous, coal stringers only at base with contact of coal                                                                                                                                          | Bulk Mac. ✓ |
| 51      |         | 143.34 | 143.37 | .03                |                    |                  | Coal                        | powder and pieces of dull sheared coal with carbonaceous mudstone                                                                                                                                                                                       |             |
| 51      |         | 143.37 | 143.50 | .13                |                    |                  | Coal                        | dull, badly sheared, pieces are slivered, very broken and sheared                                                                                                                                                                                       |             |
| 51      |         | 143.50 | 143.63 | .13                |                    |                  | Coal                        | dull lustrous, broken, powder and pieces at base, sheared                                                                                                                                                                                               |             |
|         |         | 143.63 | 143.68 | .05                |                    |                  | <u>Lost Coal Sample</u>     | <u>sample 1, ply 1, 143.34-143.68 meter interval</u>                                                                                                                                                                                                    |             |
| 51      |         | 143.68 | 143.77 | .09                |                    |                  | Coaly Mudstone              | bright coal stringers, broken, sheared                                                                                                                                                                                                                  |             |
| 51      |         | 143.77 | 143.98 | .21                |                    |                  | Mudstone                    | powder and pieces, stick core at base, highly polished, sheared, broken pieces are slivered, carbonaceous, dark grey                                                                                                                                    |             |
| 52      |         | 143.98 | 144.08 | .10                |                    |                  | Mudstone and Coaly Mudstone | powder and pieces, sheared and polished mudstone pieces (.05 m), powder coaly mudstone and coal (for 0.5 m), highly sheared, falls apart when touched, but can see shearing across tiny pieces which are stuck together to form a soft lump of mudstone |             |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                              | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------|--------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                              |            |
| 52      |         | 144.08 | 144.83 | .75                |                    | 145.38           | Mudstone                | dark grey, carbonaceous plant fragments, polished surfaces, slickensides                                     | Bulk Mac.  |
| 52      |         | 144.83 | 145.73 | .9                 |                    |                  | Mudstone                | dark grey, slickensides, rare plant fragments, last 10 cm heavily slicked with coal stringers                |            |
| 52      |         | 145.73 | 145.76 | .03                |                    |                  | Coaly Mudstone          | broken, pieces and powder, bright coal stringers, sheared, polished surfaces                                 |            |
| 52      |         | 145.76 | 145.79 | .03                |                    |                  | Coal                    | dull, broken pieces, sheared                                                                                 |            |
| 52      |         | 145.79 | 145.82 | .03                |                    |                  | Coal                    | dull, hard, mudstone clasts, sheared                                                                         |            |
| 52      |         | 145.82 | 145.93 | .11                |                    |                  | Coal                    | heavily sheared with little folds and kinks in coal, original lithology obliterated, very friable stick core |            |
| 52      |         | 145.93 | 145.98 | .05                |                    |                  | Coal                    | as above, one piece, incredible shear planes                                                                 |            |
| 52      |         | 145.98 | 146.04 | .06                |                    |                  | Coal                    | powdered sheared coal                                                                                        |            |
|         |         | 146.04 | 146.25 | .21                |                    |                  | <u>Lost Coal Sample</u> | <u>sample 1, ply 2</u> 145.76-146.25                                                                         |            |
| 52      |         | 146.25 | 146.34 | .09                |                    | Coaly Mudstone   | large bright coal pods  |                                                                                                              |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                |                                                                                                                                                                                                                             | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                                                  | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                             |            |
| 52      |         | 146.34 | 146.36 | .02                |                    |                  | Coal                                                  | bright coal band between mudstones                                                                                                                                                                                          | Vit 12 ✓   |
| 52      |         | 146.36 | 146.77 | .41                |                    |                  | Coaly Mudstone/<br>Carbonaceous<br>Mudstone<br>Sample | top 8 cm very coaly, 12 cm mudstone with abundant slickensides, lower 24 cm all powder and pieces, last 14 cm is all gooey, sticky black coaly mudstone, some bright coal pieces<br><u>sample 1, ply 3; 146.25 - 146.77</u> | Bulk Mac.  |
|         |         | 146.77 | 146.97 | .20                |                    |                  | <u>Lost Coal</u>                                      |                                                                                                                                                                                                                             |            |
| 53      |         | 146.97 | 147.27 | .30                |                    |                  | Coal                                                  | dull lustrous, hard good stick                                                                                                                                                                                              |            |
| 53      |         | 147.27 | 147.30 | .03                |                    |                  | Coal                                                  | bright                                                                                                                                                                                                                      |            |
| 53      |         | 147.30 | 147.37 | .07                |                    |                  | Coal                                                  | powder and pieces, mostly bright                                                                                                                                                                                            |            |
| 53      |         | 147.37 | 147.42 | .05                |                    |                  | Coal                                                  | dull banded, broken pieces                                                                                                                                                                                                  |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                               | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                               |            |
|         |         |        |        |                    |                    | 147.82           |                        |                                                                                                                               |            |
| 53      |         | 147.42 | 147.49 | .07                |                    |                  | Coal                   | dull lustrous, hard, 3 mm thick stoney band, fusain stringers                                                                 |            |
| 53      |         | 147.49 | 147.54 | .05                |                    |                  | Coal                   | some bands are heavily sheared, probably dull banded                                                                          |            |
| 53      |         | 147.54 | 147.70 | .16                |                    |                  | Coal                   | dull lustrous, hard, broken in top 2 cm then good stick                                                                       |            |
| 53      |         | 147.70 | 147.72 | .02                |                    |                  | Coal                   | bright                                                                                                                        |            |
|         |         |        |        |                    |                    |                  | <u>Lost Coal</u>       |                                                                                                                               |            |
| 53      |         | 147.72 | 147.79 | .05                |                    |                  |                        |                                                                                                                               |            |
| 53      |         | 147.79 | 147.83 | .04                |                    |                  | Coal                   | powder and pieces, mostly bright pieces                                                                                       |            |
| 53      |         | 147.83 | 147.85 | .02                |                    |                  | Coal                   | dull, sheared, hard, hard shear planes                                                                                        |            |
| 53      |         | 147.85 | 147.90 | .05                |                    |                  | Coal                   | dull banded, hard                                                                                                             |            |
| 53      |         | 147.90 | 148.0  | .10                |                    |                  | Coal                   | heavily sheared, faint original banding, numerous fusain clasts and bands up to 1 cm thick                                    |            |
|         |         |        |        |                    |                    |                  | <u>Lost Coal</u>       |                                                                                                                               |            |
| 53      |         | 148.0  | 148.12 | .12                |                    |                  |                        |                                                                                                                               |            |
| 53      |         | 148.12 | 148.19 | .07                |                    |                  | Coal                   | powder and pieces, some bright, some dull                                                                                     |            |
| 53      |         | 148.19 | 148.26 | .07                |                    |                  | Coal                   | dull, bright with fusain bands and small very hard clasts of dull coal, appears to be continuous from powder and pieces above |            |



| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                  | Sample No.  |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                  |             |
| 53      |         | 148.26 | 148.33 | .07                |                    |                  | Coal                   | dull banded, broken pieces                                                                                                                                                                       |             |
| 53      |         | 148.33 | 148.47 | .14                |                    |                  | Coal Sample            | dull lustrous, hard, shear planes, good stick<br><u>sample 1, ply 4</u> 146.77-148.47                                                                                                            | Bulk Mac. ✓ |
|         |         |        |        |                    |                    |                  | Note:                  | next .50 m is one solid piece                                                                                                                                                                    |             |
| 53      |         | 148.47 | 148.72 | .25                |                    |                  | Coal Sample            | dull lustrous, extremely hard with grainy sugary texture, pyritic streaks, brown on little nodules which can be seen on cut surface, some pieces heavier<br><u>sample 1, ply 5</u> 148.47-148.72 | Bulk Mac. ✓ |
| 53      |         | 148.72 | 148.97 | .25                |                    |                  | Coal                   | dull lustrous, beautiful, hard                                                                                                                                                                   |             |
| 53      |         | 148.97 | 149.17 | .20                |                    |                  | Coal                   | dull lustrous, solid stick                                                                                                                                                                       |             |
| 53      |         | 149.17 | 149.25 | .08                |                    |                  | Coal                   | bright banded, solid stick                                                                                                                                                                       | Vit 13 ✓    |
| 53      |         | 149.25 | 149.35 | .10                |                    |                  | Coal                   | dull lustrous, solid                                                                                                                                                                             |             |
| 53      |         | 149.35 | 149.49 | .14                |                    |                  | Coal                   | broken, powdered, appears to be dull banded                                                                                                                                                      |             |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION                                                              |                                                 | Sample No.  |
|---------|---------|--------|--------|---------------------|---------------------|------------------|-------------------------------------------------------------------------------------|-------------------------------------------------|-------------|
|         |         | From   | To     |                     |                     |                  | MAIN                                                                                | Amplified (Include Coal Recovery for Each Seam) |             |
| 53      |         | 149.49 | 149.61 | .12                 |                     |                  | <u>Lost Coal</u>                                                                    |                                                 |             |
| 53      |         |        |        |                     | 149.96              |                  |                                                                                     |                                                 |             |
| 54      |         | 149.61 | 149.70 | .09                 |                     | Coal             | dull banded, hard good stick                                                        |                                                 |             |
| 54      |         | 149.70 | 149.85 | .15                 |                     | Coal             | hard good stick, dull banded, some fusain stringers, sheared                        |                                                 |             |
| 54      |         | 149.85 | 149.92 | .07                 |                     | Coal             | sheared, original lithology obliterated, good stick, dull lustrous                  |                                                 |             |
| 54      |         | 149.92 | 150.01 | .09                 |                     | Coal             | sheared, dull banded, some fusain stringers                                         |                                                 |             |
| 54      |         | 150.01 | 150.12 | .11                 |                     | Coal             | sheared, dull lustrous, hard with fusain stringers                                  |                                                 |             |
|         |         | 150.12 | 150.16 | .04                 |                     |                  | <u>Lost Coal</u>                                                                    |                                                 |             |
| 54      |         | 150.16 | 150.21 | .05                 |                     | Coal             | bright banded, pieces                                                               |                                                 |             |
| 54      |         | 150.21 | 150.28 | .07                 |                     | Coal             | bright with fusain stringers, sheared                                               |                                                 | Vit 14 ✓    |
| 54      |         | 150.28 | 150.32 | .04                 |                     | Coal Sample      | bright banded, very hard dull 2 mm layer<br><u>sample 1, ply 6; 148.68 - 150.32</u> |                                                 | Bulk Mac. ✓ |
| 54      |         | 150.32 | 150.36 | .04                 |                     | Ashband          | light grey, carbonaceous and coaly stringers                                        |                                                 |             |
| 54      |         | 150.36 | 150.39 | .03                 |                     | Coal             | dull and bright                                                                     |                                                 |             |
|         |         | 150.39 | 150.40 | .01                 |                     | Coal             | dull lustrous                                                                       |                                                 |             |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                             | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                             |            |
| 54      |         | 150.40-150.44 |    | .04                |                    |                  | <u>Lost Core</u>       |                                                                                                                                             |            |
|         |         | 150.44-150.46 |    | .02                |                    |                  | <u>Lost Coal</u>       |                                                                                                                                             |            |
| 54      |         | 150.46-150.56 |    | .10                |                    |                  | Coal                   | powder and pieces, one lump but powders at touch, extremely sheared and broken, no fresh surfaces, completely powdered                      |            |
| 54      |         | 150.56-150.64 |    | .08                |                    |                  | Coal                   | dull lustrous, sheared, hard, 1 single lump, very hard in places                                                                            |            |
| 54      |         | 150.64-150.72 |    | .08                |                    |                  | Coal                   | powder and pieces, highly sheared, original lithology, obliterated, polished and sheared surfaces, possibly dull lustrous, fusain stringers |            |
| 54      |         | 150.72-150.75 |    | .03                |                    |                  | <u>Lost Coal</u>       |                                                                                                                                             |            |
| 54      |         | 150.75-150.82 |    | .07                |                    |                  | Coal                   | with grainy texture, dull banded, brown streak, extremely hard pyrite, siderite cement                                                      |            |
| 54      | 80      | 150.82-150.85 |    | .03                |                    |                  | Tuff Band              | light grey, soft                                                                                                                            | Bulk Mac.  |
|         |         |               |    |                    |                    |                  | Sample                 | <u>sample 1, ply 7</u> 150.32-150.85                                                                                                        |            |
| 54      |         | 150.85-150.88 |    | .03                |                    |                  | Coal                   | dull lustrous, hard, sheared                                                                                                                |            |
| 54      |         | 150.88-150.90 |    | .02                |                    |                  | Coal                   | soft, powder, sheared                                                                                                                       |            |
| 54      |         | 150.90-150.94 |    | .04                |                    |                  | Coal                   | dull lustrous, hard                                                                                                                         |            |
| 54      |         | 150.94-150.99 |    | .05                |                    |                  | Coal                   | bright, hard                                                                                                                                |            |
| 54      |         | 150.99-151.06 |    | .07                |                    |                  | Coal                   | bright, soft                                                                                                                                |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                        | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)        |            |
| 54      |         | 151.06 | 151.10 | .04                 |                     |                  | Coal                   | bright, soft, one piece but crumbly                    | Vit 15 ✓   |
| 54      |         | 151.10 | 151.19 | .09                 |                     |                  | Coal                   | dull lustrous, hard, good stick, broken pieces at base |            |
| 54      |         | 151.19 | 151.60 | .41                 |                     |                  | <u>Lost Coal</u>       |                                                        |            |
| 54      |         | 151.60 | 151.62 | .02                 |                     |                  | Coal                   | dull lustrous, hard broken, piece is ground            |            |
| 54      |         | 151.62 | 151.64 | .02                 |                     |                  | Coal                   | sheared, dull lustrous, broken, powder                 |            |
|         |         |        |        |                     | 151.48              |                  |                        |                                                        |            |
| 54      |         | 151.64 | 151.69 | .05                 |                     |                  | Coal                   | sheared, one piece, dull banded                        |            |
| 54      |         | 151.69 | 151.72 | .03                 |                     |                  | Coal                   | sheared as above, dull lustrous, broken pieces         |            |
| 54      |         | 151.72 | 151.84 | .12                 |                     |                  | <u>Lost Coal</u>       |                                                        |            |
| 54      |         | 151.84 | 151.87 | .03                 |                     |                  | Coal                   | dull and bright, hard, pieces, broken                  |            |

| Box No. | BCA (°) | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                   | Sample No. |
|---------|---------|--------|--------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                   |            |
| 54      |         | 151.87 | 151.91 | .04                |                    |                  | Coal                   | bright banded, two pieces                                                                         | Bulk Mac.  |
| 54      |         | 151.91 | 151.96 | .05                |                    |                  | Coal                   | sheared, soft, dull banded, fusain stringers                                                      |            |
| 54      |         | 151.96 | 152.01 | .05                |                    |                  | Coal                   | dull and bright, sheared, one piece                                                               |            |
| 54      |         | 152.01 | 152.06 | .05                |                    |                  | Coal                   | dull and bright, sheared, one piece                                                               |            |
| 54      |         | 152.06 | 152.16 | .10                |                    |                  | <u>Lost Coal</u>       |                                                                                                   |            |
| 54      |         | 152.16 | 152.18 | .02                |                    |                  | Tuff Band              | light grey on outside, dark grey inside, micaceous, coal stringers                                |            |
| 54      |         | 152.18 | 152.31 | .13                |                    |                  | <u>Lost Coal</u>       |                                                                                                   |            |
| 54      |         | 152.31 | 152.36 | .05                |                    |                  | Coal                   | sheared, soft, dull banded                                                                        |            |
|         |         |        |        |                    |                    |                  | Sample                 | <u>sample 1, ply 8</u> 150.85-152.36                                                              |            |
| 54      |         | 152.36 | 152.37 | .01                |                    |                  | <u>Lost Coal</u>       |                                                                                                   |            |
| 54      |         | 152.37 | 152.42 | .05                |                    |                  | Coal                   | dull banded, grainy texture, brown streak, hard, pyritic, not as hard or pyritic as some          |            |
| 54      |         | 152.42 | 152.47 | .05                |                    |                  | Coal                   | dull and bright (or banded), grainy texture, brown streak as above, hard                          |            |
| 54      |         | 152.47 | 152.51 | .04                |                    |                  | Coal                   | dull banded, grainy texture as above, hard                                                        |            |
| 54      |         | 152.51 | 152.61 | .10                |                    |                  | Coal                   | dull banded, grainy texture, brown streak, hard, shearing is evident, vertically and horizontally |            |

| Box No. | BCA (°) | Depth         |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                           | Sample No. |
|---------|---------|---------------|----|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------|------------|
|         |         | From          | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                           |            |
|         |         | 152.61-152.62 |    | .01                |                    |                  | <u>Lost Coal</u>       |                                                                           |            |
| 54      |         | 152.62-152.69 |    | .07                |                    |                  | Coal                   | powder and pieces, bright pieces, sheared                                 |            |
| 54      |         | 152.69-152.74 |    | .05                |                    |                  | Coal                   | sheared, 1 cm thick band of boney coal at base, brown streak              | Bulk Mac.  |
|         |         |               |    |                    |                    |                  | Sample                 | <u>sample 1, ply 9</u> 152.36-152.74                                      |            |
| 54      |         | 152.74-152.88 |    | .14                |                    |                  | Mudstone               | carbonaceous mudstone, coaly mudstone at top, coal stringers, solid stick |            |

| Box No. | BCA (°)     | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                               | Sample No. |
|---------|-------------|--------|--------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |             | From   | To     |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                               |            |
| 55      |             | 152.88 | 153.05 | .17                |                    | 153.0            | Carbonaceous Mudstone  | dark grey, very carbonaceous, coal stringers and pods up to 3 cm thick, broken, slickensides, polished surfaces                                                               |            |
| 55      | 70°         | 153.05 | 153.65 | .60                |                    |                  | Mudstone               | as above, carbonaceous, coal stringers, polished surfaces, less carbonaceous towards base                                                                                     |            |
|         | 65°         | 153.65 | 154.60 | .95                |                    |                  | Sandy Siltstone        | medium grey, argillaceous, silty, sandy laminations, sparse carbonaceous plant fragments, coal stringers only at top, mottling of laminations, possible bioturbations (faint) |            |
|         |             |        |        |                    |                    | 154.53           | NOTE:                  | boxes 55 and 56 do not fit geophysical log, sandy siltstone and lost coal were problematic to fit between core and geophysical logs                                           |            |
| 55      | 55°<br>-10° | 154.60 | 154.82 | .22                |                    |                  | Sandy Siltstone        | as above, very carbonaceous at base, BCA's vary considerably in this unit, it appears depositional, vary from 55° to 30° to 10°                                               |            |
|         |             | 154.82 | 156.44 | 1.62               |                    |                  | <u>Lost Coal</u>       |                                                                                                                                                                               |            |
|         |             | 156.44 | 157.09 | .65                |                    |                  | Sandy Siltstone        | calcite breccia at base of steep dips, 2 cm thick, abundant slicks and polished surfaces, wispy calcite fracture filling at base                                              |            |
| 56      | 20°         | 157.09 | 157.85 | .76                |                    |                  | Sandy Siltstone        | silty, sandy, argillaceous, carbonaceous plant fragments, polished surfaces, muddy at base, calcite fracture filling                                                          |            |

| Box No. | BCA (°) | Depth  |        | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|--------|--------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From   | To     |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |
| 56      | 0-90    | 157.85 | 159.17 | 1.32                |                     | 157.58           | Carbonaceous Mudstone  | <p>dark grey, very carbonaceous, coaly mudstone in places, sharp contact with siltstone at top, coal pods of bright coal, stringers, dull banded for 3 cm thick, extremely sheared with polished surfaces</p> <p>BCA's vary from 45° to 0°, the middle 70 cm are vertical, extremely sheared, broken and very friable, crumble when touched, powdered coal stringer at base of 70 cm, mudstone is almost completely powder at base of vertical section, then solid mudstone with horizontal coal stringers immediately below vertical section, 70 cm vertical section is mostly all coaly mudstone, appears to be part of fault/fold, fold in box 55, faulted in mudstone in this box</p> |            |
| 56      |         |        |        |                     |                     | 159.10           |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |
| 56      | (50-70) | 159.17 | 159.75 | .58                 |                     |                  | Mudstone               | <p>dark grey, carbonaceous, coal stringers, no laminations, slickensides, grades to siltstone at base</p> <p>boxes 55-59 appear to be overbank deposits, gradational from mudstones, and coal swamps back and forth from sands to silts, very variable lithologies, generally fining upwards from each sand interbed, only major lithologies are broken out</p>                                                                                                                                                                                                                                                                                                                           |            |
| 57      | 80      | 159.75 | 160.52 | .77                 |                     |                  | Sandstone              | <p>dark medium grey with dark and light silty and muddy laminations, plant fragments, coal stringers, slickensides, small rip up clasts at base, sharp contact at base with mudstone</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
|         |         | 160.52 | 160.76 | .24                 |                     |                  | <u>Lost Coal</u>       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |



| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                              | Sample No.           |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------|----------------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified<br>(Include Coal Recovery for Each Seam)                                           |                      |
| 22      |         | 61.18 | 61.20 | .02                |                    |                  | Coal                   | dull banded                                                                                  | SAMPLE<br>2<br>PLY 1 |
| 22      |         | 61.20 | 61.26 | .06                |                    |                  | Coal                   | dull                                                                                         |                      |
| 22      |         | 61.26 | 61.35 | .09                |                    |                  | Coal                   | dull lustrous, sheared                                                                       |                      |
| 22      |         | 61.35 | 61.40 | .05                |                    |                  | Coal                   | dull, lustrous, sheared                                                                      |                      |
| 22      |         | 61.40 | 61.50 | .1                 |                    |                  | Coal                   | goes to powder as soon as touched, badly sheared, dull banded at top, unable to tell at base |                      |
| 22      |         | 61.50 | 61.53 | .03                |                    |                  | Coal                   | dull and badly sheared                                                                       |                      |
| 22      |         | 61.53 | 61.57 | .04                |                    |                  | Coal                   | dull, lustrous                                                                               |                      |
| 22      |         | 61.57 | 61.61 | .04                |                    |                  | Coal                   | dull, lustrous, hard                                                                         |                      |
| 22      |         | 61.61 | 61.64 | .03                |                    |                  | Coal                   | dull, lustrous, hard                                                                         |                      |
| 22      |         | 61.64 | 61.66 | .02                |                    |                  | Coal                   | dull, lustrous, hard, sheared planes                                                         |                      |
| 22      |         | 61.66 | 61.72 | .06                |                    |                  | Coal                   | dull, lustrous, hard                                                                         |                      |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                             | Sample No.           |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|-------------------------------------------------------------|----------------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)             |                      |
| 22      |         | 61.72 | 61.74 | .02                 |                     |                  | Coal                   | dull, lustrous, hard                                        | SAMPLE<br>2<br>PLY 1 |
| 22      |         | 61.74 | 61.78 | .04                 |                     |                  | Coal                   | dull, lustrous, hard                                        |                      |
| 22      |         | 61.78 | 61.83 | .05                 |                     |                  | Coal                   | dull, lustrous, hard                                        |                      |
| 22      |         | 61.83 | 61.85 | .02                 |                     |                  | Coal                   | dull, lustrous, sheared                                     |                      |
| 22      |         | 61.85 | 61.93 | .08                 |                     |                  | Coal                   | dull, lustrous                                              |                      |
| 22      |         | 61.93 | 61.99 | .06                 |                     |                  | Coal                   | dull, lustrous                                              |                      |
| 23      |         | 61.99 | 62.10 | .11                 |                     |                  | Coal                   | dull banded, hard                                           |                      |
| 23      |         | 62.10 | 62.20 | .1                  |                     |                  | Coal                   | dull, lustrous, hard                                        |                      |
| 23      |         | 62.20 | 62.25 | .05                 |                     |                  | Coal                   | dull, lustrous, fusain stringers                            |                      |
|         |         |       |       |                     |                     |                  | SAMPLE                 | <u>Sample 2, Ply I, 60.32-62.25</u>                         |                      |
| 23      |         | 62.25 | 62.29 | .04                 |                     |                  | Coal                   | dull, lustrous, grainy texture, brown streak, pyrite grains | BULK<br>MAC          |
| 23      |         | 62.29 | 62.39 | .1                  |                     |                  | Coal                   | dull banded, grainy, as above, with pyrite grains           |                      |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION              |                                                  | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|-------------------------------------|--------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                                | Amplified (Include Coal Recovery for Each Seam)  |            |
| 23      |         | 62.39 | 62.48 | .09                |                    |                  | Coal                                | dull banded, oolitic texture of pyrite grains    | BULK MAC ✓ |
|         |         |       |       |                    |                    |                  | SAMPLE                              | <u>Sample 2, Ply 2, 62.25-62.48, 19 cm thick</u> |            |
| 23      |         | 62.48 | 62.57 | .09                |                    |                  | Coal                                | dull banded                                      | BULK MAC ✓ |
| 23      |         | 62.57 | 62.64 | .07                | 63.1               | Coal             | bright banded                       |                                                  |            |
| 23      |         | 62.64 | 62.67 | .03                |                    | Coal             | bright banded                       |                                                  |            |
| 23      |         | 62.67 | 62.70 | .03                |                    | Coal             | bright banded                       |                                                  |            |
| 23      |         | 62.70 | 62.72 | .02                |                    | Coal             | bright banded                       |                                                  |            |
| 23      |         | 62.72 | 62.74 | .02                |                    | Coal             | dull, lustrous                      |                                                  |            |
| 23      |         | 62.74 | 62.76 | .02                |                    | Coal             | dull banded                         |                                                  |            |
| 23      |         | 62.76 | 62.82 | .06                |                    | Coal             | dull                                |                                                  |            |
|         |         |       |       |                    |                    | SAMPLE           | <u>Sample 2, Ply 3, 62.48-62.82</u> |                                                  |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                    | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                    |            |
| 23      |         | 62.82 | 62.87 | .05                |                    |                  | Carbonaceous Mudstone  | slickensides, polished surfaces, coaly mudstone in places, heavily sheared                                                                         |            |
| 23      |         | 62.87 | 64.32 | 1.45               |                    |                  | Mudstone               | dark grey, very carbonaceous, sheared with abundant polished surfaces, slickensides, calcite veining, heavily broken in places, powdered in places |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION      |                                                                                                                                                                                               | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                        | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                               |            |
| 24      |         | 64.32 | 65.36 | 1.04                |                     |                  | Mudstone                    | dark grey, very carbonaceous with abundant plant fragments and coalified plant fragments, abundant slickensides and polished surfaces seen when broken, good stick core                       |            |
| 24      |         | 65.36 | 66.89 | 1.53                |                     | 66.1             | Mudstone                    | as above, very carbonaceous, numerous coal stringers, no laminations, very dark grey colour                                                                                                   |            |
| 25      | 72°     | 66.89 | 67.39 | .50                 |                     |                  | Mudstone                    | as above, very faint laminations                                                                                                                                                              |            |
| 25      |         | 67.39 | 67.44 | .05                 |                     |                  | Carbonaceous/<br>Mudstone   | coal stringers, plant fragments, slickensides, polished surfaces                                                                                                                              |            |
| 25      |         | 67.44 | 67.48 | .04                 |                     |                  | Carbonaceous/<br>Mudstone   | a solid piece but previously powdered then hardened again, small pieces of powder stuck together with small folding and shear surfaces visible when lump is broken, base has polished surface |            |
|         |         | 67.48 | 67.84 | .36                 |                     |                  | Lost Core<br>POSSIBLE FAULT | mudstone                                                                                                                                                                                      |            |
| 25      |         | 67.84 | 67.88 | .04                 |                     |                  | Coal and Tuff<br>Band       | mostly powder but is still a lump of pulverized coal - tuff band is sheared and folded                                                                                                        | KILBY      |
| 25      |         | 67.88 | 67.92 | .04                 |                     |                  | Coal                        | completely sheared, no fresh surface, small lumps and powder                                                                                                                                  |            |
|         |         | 67.92 | 68.22 | .30                 |                     |                  | Lost Coal                   |                                                                                                                                                                                               |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                        | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                        |            |
| 25      |         | 68.22 | 68.31 | .09                |                    |                  | Coal                   | sheared, hard, probably dull banded as faint bands can be seen                                                                         | VIT 3 ✓    |
| 25      |         | 68.31 | 68.44 | .13                |                    |                  | Coal                   | powdered, sheared pieces, possibly coaly mudstone at base                                                                              |            |
| 25      |         | 68.44 | 68.46 | .02                |                    |                  | Mudstone               | dark grey, broken                                                                                                                      |            |
|         |         | 68.46 | 68.54 | .08                |                    |                  | Lost Core              |                                                                                                                                        |            |
| 25      |         | 68.54 | 68.61 | .07                |                    |                  | Tuff Band              | light grey, soft, broken, micaceous                                                                                                    |            |
| 25      |         | 68.61 | 68.76 | .15                |                    |                  | Mudstone               | dark grey, rare carbonaceous plant fragments, bright coal stringer                                                                     |            |
| 25      | 72°     | 68.76 | 70.16 | 1.4                |                    | 69.2             | Siltstone              | medium dark grey, sand, silt and argillaceous laminations, coal stringers, argillaceous in lower half, sandy interbed below it at base |            |
| 26      | 72°     | 70.16 | 71.20 | 1.04               |                    |                  | Mudstone               | medium dark grey, slightly silty at top, coaly stringers parallel to bedding, slickensides                                             |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                           |            |
| 26      |         | 71.20 | 71.29 | .09                |                    |                  | Tuff Band              | light grey, soft, coal stringers at top and bottom contacts with mudstone, micaceous, carbonaceous plant fragments                                                                                                                                                                                                        | KILBY      |
| 26      |         | 71.29 | 72.46 | .43                |                    |                  | Mudstone               | as above, tuff band is in mudstone (sharp contact), dark grey, coal stringers, broken in lower half, carbonaceous plant fragments                                                                                                                                                                                         |            |
| 26      | 70°     | 72.46 | 73.32 | .86                | 72.2               |                  | Mudstone               | as above, increasingly carbonaceous, coal stringers abundant, silty laminations at base                                                                                                                                                                                                                                   |            |
| 27      |         | 73.32 | 73.52 | .20                |                    |                  | Siltstone              | medium brown grey, abundant carbonaceous and coaly plant fragments, coal bands up to 2 mm thick, argillaceous towards base                                                                                                                                                                                                |            |
|         |         |       |       |                    |                    |                  |                        | This box and the next three are part of a carbonaceous siltstone and mudstone sequence interpreted as an overbank deposit, faint laminations, abundant coal stringers and carbonaceous fragments, faint mottling of sediment (in places) characterize the sediments, variable gradations between mudstones and siltstones |            |
| 27      |         | 73.52 | 74.63 | 1.11               |                    |                  | Mudstone               | dark gre, carbonaceous, coalified plant fragments, very carbonaceous in places, grades to carbonaceous mudstone                                                                                                                                                                                                           |            |

| Box No. | BCA (°)    | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                | Sample No. |
|---------|------------|-------|-------|--------------------|--------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                |            |
| 27      | 70°        | 74.63 | 75.43 | .80                |                    |                  | Carbonaceous Mudstone  | dark grey, abundant plant fragments and coal stringers and bands up to 5 mm thick                                                                                                                                                                                              |            |
| 27      |            | 75.43 | 75.6  | .17                |                    | 75.3             | Carbonaceous Mudstone  | as above                                                                                                                                                                                                                                                                       |            |
| 27      |            | 75.6  | 75.9  | .3                 |                    |                  | Siltstone              | argillaceous, carbonaceous plant fragments, coal stringers                                                                                                                                                                                                                     |            |
| 28      | 70°        | 75.9  | 76.25 | .35                |                    |                  | Siltstone              | with sand, silt and argillaceous laminations                                                                                                                                                                                                                                   |            |
|         |            | 76.25 | 78.43 | 2.18               |                    |                  | Mudstone               | dark grey, carbonaceous, coal stringers up to 5 mm thick, silty towards base, thin tuff band 15 cm thick approximately 1.1 m from top, wispy calcite veinlets parallel to bedding<br>NOTE: pieces of core in box are mixed up - tried to put them in order as well as possible |            |
| 28      | 70°        | 78.43 | 78.69 | .26                |                    | 78.3             | Mudstone               | dark grey as above, not silty                                                                                                                                                                                                                                                  |            |
| 29      | 65°<br>55° | 78.69 | 81.46 | 2.77               |                    |                  | Mudstone               | dark grey to medium brown grey, carbonaceous, coal stringers and blebs, mottling of sediment, faint silty laminations, wispy calcite veining, slickensides, polished surfaces, no silty laminations at base                                                                    |            |



| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                          | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                          |            |
| 30      | 45°     | 81.46 | 84.16 | 2.70               |                    | 81.4             | Mudstone               | slightly silty, carbonaceous, fewer coal stringers than previous unit, calcite veining, and fracture filling, wispy calcite veins, silty laminations, churned character from overbank deposit, with carbonaceous stringers, slickensided | VIT 4 ✓    |
| 31      |         | 84.16 | 84.43 | .27                |                    |                  | Mudstone               | as above, carbonaceous, slightly silty, slickensides                                                                                                                                                                                     |            |
| 31      |         | 84.43 | 86.31 | 1.88               |                    | 84.4             | Mudstone               | dark grey, carbonaceous coal stringers (up to 5 mm thick), slickensides, polished surfaces, calcite veining, heavily broken at base, very carbonaceous at base                                                                           |            |
|         |         |       | 86.31 | 86.37              | .06                |                  | Lost Core              |                                                                                                                                                                                                                                          |            |
| 31      | 60°     | 86.37 | 86.64 | .27                |                    | 86.9             | Coaly Mudstone         | 2 cm thick ash band 7 cm from top, abundant coal stringers, slickensides, polished surfaces                                                                                                                                              |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                            | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                            |            |
| 32      |         | 86.64 | 87.98 | 1.34                |                     |                  | Mudstone               | carbonaceous in places, carbonaceous mudstone (especially in lower third), numerous coal stringers up to 5 mm in width, slickensides and polished surfaces |            |
| 32      |         | 87.98 | 88.05 | .07                 |                     |                  | Tuffband               | light grey and soft, micaceous with coal stringers and carbonaceous fragments, contacts are intact, not broken                                             | KILBY      |
| 32      |         | 88.05 | 88.11 | .06                 |                     |                  | Coal                   | dull, very light, streaks black, no cleat, sharp contact with tuff at top                                                                                  |            |
|         |         | 88.11 | 88.17 | .06                 |                     |                  | Lost Coal              |                                                                                                                                                            |            |
| 32      |         | 88.17 | 88.27 | .1                  |                     |                  | Coal                   | dull banded, shear and polished surfaces, broken , some stick and some powder                                                                              |            |
| 32      |         | 88.27 | 88.39 | .12                 |                     |                  | Coal                   | dull banded, shear planes                                                                                                                                  | VIT 5 ✓    |
| 32      |         | 88.39 | 88.46 | .07                 |                     | 88.7             | Coal                   | dull banded, shear planes, good stick                                                                                                                      |            |
| 32      |         | 88.46 | 89.4  | .94                 |                     |                  | Mudstone               | dark grey, very carbonaceous, carbonaceous mudstone at top, first 10 cm has coal stringers and slickensides                                                |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                    | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                    |            |
| 33      |         | 89.4  | 89.63 | .23                 |                     |                  | Coaly Mudstone         | as above                                                                                                           |            |
| 33      | 57°     | 89.63 | 90.13 | .50                 |                     |                  | Siltstone              | gradational mottling at top, faint silty laminations, appears to be silty interbed in mudstone unit                |            |
| 33      |         | 90.13 | 90.78 | .65                 |                     | 90.5             | Mudstone               | darkgrey and carbonaceous, abundant coaly stringers                                                                |            |
| 33      |         | 90.78 | 91.52 | .74                 |                     |                  | Siltstone              | carbonaceous plant fragments and coal stringers, no laminations, appears to be overbank deposit, possibly reworked |            |
|         |         |       |       |                     |                     |                  |                        | grades quickly back to mudstone from above unit                                                                    |            |
| 33      |         | 91.52 | 92.26 | .74                 |                     |                  | Mudstone               | carbonaceous mudstone, abundant coal stringers, plant fragments, coaly mudstone in places                          |            |
| 34A     |         | 92.26 | 92.43 | .17                 |                     |                  | Carbonaceous Mudstone  | as above                                                                                                           |            |
| 34A     |         | 92.43 | 93.14 | .71                 |                     |                  | Siltstone              | gradational from mudstone, occasional plant fragments, coal stringers, no laminations, featureless                 |            |
| 34A     |         | 93.14 | 94.98 | 1.84                |                     | 93.6             | Siltstone              | as above but mottling and faint bioturbation, very few plant fragments                                             |            |

| Box No. | BCA (°)    | Depth  |        | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                                                                                   | Sample No. |
|---------|------------|--------|--------|--------------------|--------------------|------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From   | To     |                    |                    |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                   |            |
| 34B     | 70°<br>75° | 94.98  | 95.98  | 1.0                |                    |                  | Siltstone               | as above, slightly sandy, faint argillaceous and sandy laminations, plant fragments and coaly stringers towards base, vertical calcite fracture filling, broken at base                                                           |            |
| 34B     | 70°<br>65° | 95.98  | 97.36  | 1.38               | 96.6               |                  | Siltstone               | faint argillaceous, silty and sandy laminations, occasional plant fragments and coal stringers and vertical calcite fracture filling, pyrite on fracture at base, sandy at base                                                   |            |
| 35      |            | 97.36  | 98.61  | 1.25               |                    |                  | Sandstone               | medium to light grey colour, fine to very fine grain, silty, numerous argillaceous and silty laminations and cross laminations, burrowed and mottled in places, vertical calcite fracture filling, broken along calcite fractures |            |
| 35      | 60°        | 98.61  | 99.86  | 1.25               |                    | 99.7             | Sandstone               | as above, silty and argillaceous at top, two fining upward sequences within unit culminating in silty argillaceous beds, mudstone rip-up clasts at base of sandstone, fines to siltstone at base with faint laminations           |            |
| 36      | 75°        | 99.86  | 100.90 | 1.04               |                    |                  | Siltstone/<br>Sandstone | sandstone at base, gradational to siltstone at top, small rip-up clast, cross laminations and argillaceous laminations at base (pieces of core probably mixed up) no plant fragments or coal stringers                            |            |
| 36      |            | 100.90 | 101.85 | .95                |                    | 102.7            | Mudstone                | sharp contact at base with mudstone, medium dark grey, no plant fragments, slightly silty, homogeneous                                                                                                                            |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                |            |
| 3       |         | 8.78  | 10.83 | 2.05               |                    |                  | Mudstone               | occasional silty laminations, pyrite flecks - usually burrows, tubes and burrows common, large pyrite nodule .97 m from top, 3 cm across, occasionally silty, irregular fractures when broken. |            |
| 3       | 75°     | 10.83 | 11.37 | .54                |                    | 11.0             | Mudstone               | excellent silty laminations and burrows, still iron staining along fractures                                                                                                                   |            |
| 4       |         | 11.37 | 12.82 | 1.45               |                    |                  | Mudstone               | no shell fragments seen, otherwise as above                                                                                                                                                    |            |
| 4       |         | 12.82 | 13.9  | 1.08               |                    | 12.8             | Mudstone               | as above                                                                                                                                                                                       |            |
| 5       |         | 13.9  | 14.28 | .38                |                    |                  | Mudstone               | as above                                                                                                                                                                                       |            |
| 5       | 75°     | 14.28 | 16.37 | 2.09               |                    | 14.3             | Mudstone               | as above, less silty than previous, good mudstone, monotonous, slickensides, worm tubes, rare thin 2-5 cm thick sandstone interbeds                                                            |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                       | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                       |            |
| 6       |         | 16.37 | 17.23 | .86                |                    |                  | Mudstone               | as above, homogeneous and monotonous                                                                                                                                  |            |
| 6       |         | 17.23 | 18.9  | 1.67               |                    | 17.4             | Mudstone               | 20 cm heavily bioturbated horizon near top, churned and mottled, with worm tubes, a coalified plant fragment 2 cm long rimmed with pyrite, shell impressions at base. |            |
| 7       |         | 18.9  | 20.11 | 1.21               |                    |                  | Mudstone               | abundant pyritized worm tubes                                                                                                                                         |            |
|         |         | 20.11 | 21.47 | 1.36               | 20.4               |                  | Mudstone               | dark grey, no laminations, monotonous, abundant pyrite blebs, up to 2 cm in length, when broken appear to be larger worm tubes                                        |            |
| 8       |         | 21.47 | 23.15 | 1.68               |                    |                  | Mudstone               | as above, dark grey large pyrite blebs                                                                                                                                |            |
|         |         | 23.15 | 23.92 | .77                |                    | 23.5             | Mudstone               | as above, dark grey, small coalified plant fragment rimmed with pyrite                                                                                                |            |
| 9       |         | 23.92 | 26.13 | 2.21               |                    | 26.5             | Mudstone               | very minor fracturing, dark grey, monotonous, shell casts, no laminations                                                                                             |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |
| 9       |         | 26.13 | 26.63 | .5                 |                    |                  | Mudstone               | as above                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |
| 10      |         | 26.63 | 28.03 | 1.40               |                    |                  | Mudstone               | heavily broken at base, dark grey, very irregular breaks when broken, pyritized burrows, monotonous, no laminations.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |
| 10      |         | 28.03 | 28.65 | .62                |                    | 28.7             | Mudstone               | Glauconite Horizon, minute green glauconite flecks (grains), dark grey worm tubes and pyritic worm tubes, disseminated pyrite, fine light coloured grains (possibly sand), towards base becomes increasingly churned, with increased worm tubes, grades to argillaceous sandstone at base, contains rare clasts, very fine to fine grained sands at base                                                                                                                                                                                                                          |            |
| 10      |         | 28.65 | 29.05 | .4                 |                    |                  | Sandstone              | marine sandstone, light grey, very fine to fine grained, calcite veinlets, distinct change from argillaceous sandstone to clean sandstone at top                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |
| 11      |         | 29.05 | 30.14 | 1.09               |                    |                  | Sandstone              | as above, unit continued from box 10 (marine?) sandstone, very fine to fine grained, faint laminations and crossbeds, this sandstone predominates in box 11, between interbedded, and interlaminated sections of silts and sands<br>NOTE: Boxes 11, 12, 13 and 14 appear to belong to the silty member below the glauconite horizon, (as seen in 83-17 and 83-18), but the sandstone may represent storm deposits or may indicate the gradual change from marine to non-marine, the sandstones are distinct beds between the silts and muds, the contacts are almost always sharp |            |
|         |         | 30.14 | 30.30 | .16                |                    |                  | Lost Core              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |
| 11      | 65°     | 30.30 | 31.19 | .89                |                    |                  | Sandstone/<br>Mudstone | predominantly sandstone unit with sharp contact of dark grey mudstone interbeds varying in thickness from 7 cm - 2 cm thick at irregular intervals, sharp mudstone contact at top with base of clean sand in previous unit, mudstones are slightly bioturbated, disturbed bedding, burrows (tubes) in mudstones infilled with sandstone, interbedded sandstone contains argillaceous and silty laminations (darker grey), sandstone is generally light to medium grey.                                                                                                            |            |

| Box No. | BCA (°) | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m)       | LITHOLOGIC DESCRIPTION                                                                                                                                                                                                                                                                          |                                                 | Sample No. |
|---------|---------|-------------|----|--------------------|--------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------|
|         |         | From        | To |                    |                    |                        | MAIN                                                                                                                                                                                                                                                                                            | Amplified (Include Coal Recovery for Each Seam) |            |
| 11      | 65°     | 31.19-31.37 |    | .18                | 31.7               | Lost Core              |                                                                                                                                                                                                                                                                                                 |                                                 |            |
|         |         | 31.37-32.10 |    | .73                |                    | Sandstone/<br>Mudstone | as above, 10 cm thick interlaminated mudstone unit at top, sharp contact at base with interbeds towards base, averaging 5 cm thick, calcite veining at base - 2 phases at least as original veinlets are fractured and healed again                                                             |                                                 |            |
|         |         | 32.10-32.80 |    | .7                 |                    | Sandstone/<br>Mudstone | as above, but mudstone becomes dominant at base, interbeds are thicker - distinct sandstone interbed 20 cm thick then predominantly muddy with faint silty laminations and scour and soft sediment deformation in mudstones, 3 cm calcite veinlet at top (continued from base of previous unit) |                                                 |            |
|         |         | 32.80-34.00 |    | 1.2                |                    | Sandstone              | clean, light to medium grey, very fine to fine grained sandstones, broken with iron oxide stain on fractures, mudstone rip up clasts up to 5 x 3 cm, sharp contact at base with mudstone                                                                                                        |                                                 |            |
|         | 75°     | 34.00-34.41 |    | .41                |                    | Mudstone/<br>Sandstone | as previous but thin mudstone interlaminations and interbeds are dominant, worm tubes are sandfilled and pyritic, thin very fine grained sandstone interbeds up to 5 cm thick, sharp contacts between interbeds                                                                                 |                                                 |            |



| Box No. | BCA (°)    | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                                                                                                                       | Sample No. |
|---------|------------|-------|-------|--------------------|--------------------|------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |            | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                                                                       |            |
| 12      |            | 34.41 | 34.71 | .30                |                    | 34.9             | Mudstone/Sandstone     | as above                                                                                                                                                                                                                                                                                              |            |
| 13      | 80°<br>75° | 34.71 | 37.41 | 2.70               |                    |                  | Mudstone/Sandstone     | as above, worm tubes and bioturbation increase in number towards base, small dark grey worm tubes dominant, sandstone interbeds are distinct fining upward cycles, turbidite sequences from 20 cm to 2 cm in thickness, increasingly argillaceous towards base, sands give way to silts, slickensides |            |
| 14      |            | 37.41 | 37.67 | .26                |                    |                  | Mudstone/Sandstone     | as above                                                                                                                                                                                                                                                                                              |            |
| 14      |            |       |       |                    |                    | 38.1             |                        |                                                                                                                                                                                                                                                                                                       |            |
| 14      | 78°        | 37.67 | 39.99 | 2.32               |                    |                  | Mudstone/Sandstone     | as above, mudstone interbeds heavily bioturbated, 2 sandstone interbeds of clean light grey sand, cross bedded with silty interlamination near base up to 25 cm thick, generally the sandstone interbeds are not over 10 cm thick and fine upward                                                     |            |
| 15      | 85°        | 39.99 | 40.79 | .8                 |                    |                  | Mudstone/Sandstone     | as above, heavily bioturbated with good worm tubes and sand filled burrows, regular sandstone turbidites, sharp contact common at base of sandstone                                                                                                                                                   |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION          |                                                                                                                                                                                                                                                           | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                            | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                                                                           |            |
| 15      | 82°     | 40.79 | 42.62 | 1.83               |                    | 41.1             | Mudstone/Sandstone              | as above, churned for 10 cm near base                                                                                                                                                                                                                     |            |
| 16      | 80°     | 42.62 | 43.76 | 1.14               |                    |                  | Mudstone/Siltstone              | dark grey mudstone with medium grey siltstone and sandstone interbeds, similar to previous boxes but very few sandstone interlamination and interbeds, generally more argillaceous than previous boxes, worm tubes, slightly bioturbated, pyritic burrows |            |
| 16      |         | 43.76 | 45.3  | 1.54               |                    | 44.2             | Mudstone                        | faint silty laminations as above for first 10 cm, grades to mudstone, slightly silty, dark grey worm tubes, also some pyritic ones, irregular fracture, fairly monotonous                                                                                 |            |
| 17      |         | 45.3  | 46.96 | 1.66               |                    |                  | Mudstone                        | as above, decrease in silt and worm tubes, monotonous, dark grey, typical marine mudstone                                                                                                                                                                 |            |
|         |         | 46.96 | 47.81 | .85                |                    | 47.2             | Mudstone                        | as above, no shells, monotonous homogeneous mudstone                                                                                                                                                                                                      |            |
| 18      |         | 47.81 | 47.92 | .11                |                    |                  | Mudstone                        | dark grey, extremely hard, polished from drill - probable pyrite, concretion slicked surfaces                                                                                                                                                             |            |
| 18      |         | 47.92 | 48.14 | .22                |                    |                  | Mudstone                        | dark grey, probable marine mudstone, tiny 1-2 mm carbonaceous flecks (minor) not carbonaceous, generally homogeneous and monotonous                                                                                                                       |            |
|         |         |       |       |                    |                    |                  | MOOSEBAR/<br>GETHING<br>CONTACT |                                                                                                                                                                                                                                                           |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m)                | LITHOLOGIC DESCRIPTION                                                                                        |                                                                                                                        | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                                 | MAIN                                                                                                          | Amplified (Include Coal Recovery for Each Seam)                                                                        |            |
| 18      |         | 48.14 | 48.72 | .58                |                    |                                 | Lost Coal                                                                                                     |                                                                                                                        |            |
|         |         | 48.72 | 48.76 | .04                |                    |                                 | Coal                                                                                                          | dull lustrous - dull with pearly luster, occasional fusian and bright bands                                            | VIT 1 ✓    |
|         |         | 48.76 | 48.81 | .05                |                    | 49.4                            | Coal                                                                                                          | as above                                                                                                               |            |
|         |         | 48.81 | 48.86 | .05                |                    |                                 | Coal                                                                                                          | dull, hard, ground by drill                                                                                            |            |
|         |         | 48.86 | 48.93 | .07                |                    |                                 | Coal                                                                                                          | dull, hard, ground by drill                                                                                            | BULK ✓     |
|         |         | 48.93 | 49.01 | .08                |                    |                                 | SAMPLE<br>Lost Core                                                                                           | <u>Sample 9, Ply I, 48.14-48.93</u>                                                                                    | MAC        |
|         |         | 49.01 | 49.06 | .05                |                    |                                 | Coaly Mudstone                                                                                                | heavily broken and sheared, polished surfaces, especially parallel to bedding                                          |            |
|         |         | 49.06 | 49.17 | .11                |                    |                                 | Carbonaceous Mudstone                                                                                         | dark grey, heavily sheared and slicked with polished surfaces, no BCA's but bright vitranite bands at 90° to core axis |            |
|         |         | 49.17 | 49.52 | .35                |                    |                                 | Mudstone                                                                                                      | dark grey, carbonaceous with abundant plant fragments, coal stringers at base                                          |            |
|         | 49.52   | 49.59 | .07   |                    |                    | Carbonaceous Mudstone<br>SAMPLE | abundant carbonaceous and coalified plant fragments, polished surfaces<br><u>Sample 9, Ply 2, 48.93-49.59</u> | BULK ✓<br>MAC                                                                                                          |            |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                          | Sample No. |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                          |            |
| 18      |         | 49.59 | 49.68 | .09                |                    |                  | Coal                   | dull lustrous, good stick core, hard                                                                                                     | VIT 2 ✓    |
| 18      |         | 49.68 | 49.71 | .03                |                    |                  | Coal                   | dull banded, sheared                                                                                                                     |            |
| 18      |         | 49.71 | 49.80 | .09                |                    |                  | Coal                   | bright and dull, sheared                                                                                                                 |            |
| 18      |         | 49.80 | 49.83 | .03                |                    |                  | Coal                   | dull banded, sheared                                                                                                                     |            |
| 18      |         | 49.83 | 49.88 | .05                |                    |                  | Coal                   | bright and dull, sheared                                                                                                                 |            |
| 18      |         | 49.88 | 49.94 | .06                |                    |                  | Coal                   | bright, sheared                                                                                                                          |            |
| 18      |         | 49.94 | 50.01 | .07                |                    |                  | Coal                   | bright banded, sheared                                                                                                                   |            |
| 18      |         | 50.01 | 50.10 | .09                |                    |                  | Lost Core              |                                                                                                                                          |            |
| 18      |         | 50.10 | 50.12 | .02                |                    |                  | Coal and Mudstone      | powdered                                                                                                                                 |            |
| 18      |         | 50.12 | 50.18 | .06                |                    |                  | Coal                   | dull banded, sheared with minor shear folds within coal seam<br>Sample 9, Ply 3, 49.59-50.18 m<br>sheared, polished surfaces } one piece |            |
| 18      |         | 50.18 | 50.23 | .05                |                    |                  | Coaly Mudstone         |                                                                                                                                          |            |
| 18      |         | 50.23 | 50.25 | .02                |                    |                  | Coaly Mudstone         | powdered                                                                                                                                 |            |
| 18      |         | 50.25 | 50.34 | .09                |                    |                  | Carbonaceous Mudstone  | dark grey abundant coalified and carbonaceous plant fragments and coal stringers, polished surfaces                                      |            |
| 18      |         | 50.34 | 50.49 | .15                |                    |                  | Mudstone               | carbonaceous - 5 cm thick bright coal bands, polished surfaces, slicks                                                                   |            |

| Box No. | BCA (°) | Depth       |    | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                         | Sample No. |
|---------|---------|-------------|----|--------------------|--------------------|------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From        | To |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                         |            |
| 18      |         | 50.49-50.71 |    | .22                |                    | 50.9             | Mudstone               | NOTE: Boxes 18 and 19 do not fit well with the geophysical log.<br>dark grey, heavily broken and heavily sheared, polished surfaces parallel to core form slivers of broken rock, slightly carbonaceous |            |
|         |         | 50.71-50.84 |    | .13                |                    |                  | Lost Core              |                                                                                                                                                                                                         |            |
| 18      |         | 50.84-50.93 |    | .09                |                    |                  | Mudstone               | dark grey, carbonaceous, powder, tiny mudstone pieces stuck together, slicks, shear surfaces present as well as tiny folds and shear planes within soft muddy lumps broken off from main piece          |            |
|         |         | 50.93-51.33 |    | .40                |                    |                  | Lost Core              |                                                                                                                                                                                                         |            |
| 18      |         | 51.33-51.62 |    | .29                |                    |                  | Mudstone               | dark grey, carbonaceous, coalified plant fragments, polished surfaces, slickensides, top contact has soft powdered mudstone with it, carbonaceous mudstone at base. (this could be upside down)         |            |
| 19      |         | 51.62-51.65 |    | .03                |                    |                  | Coal and Mudstone      | 30:70 powdered and pieces                                                                                                                                                                               |            |
| 19      |         | 51.65-51.68 |    | .03                |                    |                  | Carbonaceous Mudstone  | slicked and polished                                                                                                                                                                                    |            |

| Box No. | BCA (°) | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                          | Sample No. |
|---------|---------|-------|-------|---------------------|---------------------|------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|         |         | From  | To    |                     |                     |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                          |            |
| 19      |         |       |       |                     |                     |                  |                        | NOTE: core was very mixed up in box 19, tried to fit the pieces back together as best we could, but still many ill fitting pieces                                        |            |
| 19      |         | 51.68 | 52.01 | .33                 |                     |                  | Mudstone/Tuff Band     | dark grey, carbonaceous, coalified plant fragments common, 4 cm thick ash band 7 cm from top of unit, soft, light grey colour                                            |            |
| 19      |         | 52.01 | 53.58 | 1.57                |                     |                  | Mudstone               | dark grey, carbonaceous, coalified plant remains, silty and sandy in places rare laminations, soft sediment deformation, mottled disturbed bedding                       |            |
| 19      | 80°     | 53.58 | 54.21 | .63                 |                     | 53.9             | Siltstone/Sandstone    | medium grey, alternating silt and sandstone interbeds, argillaceous interlamina-tions, soft sediment deformation, mottled disturbed bedding, very fine grained sandstone |            |
| 20      | 73°     | 54.21 | 54.96 | .75                 |                     |                  | Sandstone/Siltstone    | as above, sandstone more dominant, mottling and bioturbation more dominant, medium light grey, silty at base, argillaceous laminations                                   |            |
| 20      | 75°     | 54.96 | 56.42 | 1.46                |                     | 57.0             | Siltstone              | argillaceous, medium dark grey, rare sand laminations, no plant fragments, grades to mudstone at base for last 25 cm.                                                    |            |

| Box No. | BCA (°)    | Depth |       | App. Thick-ness (m) | True Thick-ness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION  |                                                                                                                                                                        | Sample No.               |
|---------|------------|-------|-------|---------------------|---------------------|------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
|         |            | From  | To    |                     |                     |                  | MAIN                    | Amplified (Include Coal Recovery for Each Seam)                                                                                                                        |                          |
| 20      |            | 56.42 | 56.59 | .17                 |                     |                  | Mudstone                | dark grey, carbonaceous plant fragments                                                                                                                                |                          |
| 21      | 75°<br>80° | 56.59 | 58.70 | 2.11                |                     |                  | Siltstone               | medium grey, faint argillaceous and sandy laminations, slickensides, rare carbonaceous plant fragments                                                                 |                          |
| 21      |            | 58.70 | 59.59 | .69                 |                     |                  | Siltstone/<br>Sandstone | interbeds of siltstone and sandstone with argillaceous laminations, very fine to fine grained sandstone interbeds 5 - 10 cm thick, cross laminated, no plant fragments |                          |
| 22      | 80°        | 59.59 | 60.32 | .93                 |                     | 60.0             | Siltstone               | medium dark grey faint sandy laminations at top, burrow (sand-filled), rare carbonaceous plant fragments, grades to mudstone at base, slickensides                     |                          |
| 22      |            | 60.32 | 60.42 | .06                 |                     |                  | Coal                    | bright banded                                                                                                                                                          | SAMPLE<br>2 PLY 1<br>TOP |
| 22      |            | 60.42 | 60.52 | .1                  |                     |                  | Coal                    | dull banded but heavily sheared, broken, appears to have pearly lustre                                                                                                 |                          |
| 22      |            | 60.52 | 60.57 | .05                 |                     |                  | Coal                    | dull lustrous with rare bright bands                                                                                                                                   |                          |
| 22      |            | 60.57 | 60.64 | .07                 |                     |                  | Coal                    | sheared, dull lustrous with rare bright bands, some fusain bands                                                                                                       |                          |
|         |            |       |       |                     |                     |                  |                         |                                                                                                                                                                        |                          |

| Box No. | BCA (°) | Depth |       | App. Thickness (m) | True Thickness (m) | Marker Block (m) | LITHOLOGIC DESCRIPTION |                                                                                                                                                                                                    | Sample No.                 |
|---------|---------|-------|-------|--------------------|--------------------|------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|         |         | From  | To    |                    |                    |                  | MAIN                   | Amplified (Include Coal Recovery for Each Seam)                                                                                                                                                    |                            |
| 22      |         | 60.64 | 60.71 | .07                |                    |                  | Coal                   | dull banded, sheared and slickensided, shearing obliterates coal textures in places, 2 cm thick band, sheared and slicked and may have calcite fracture filling on micro scale, partially powdered | VIT 6<br>SAMPLE 2<br>PLY 1 |
| 22      |         | 60.71 | 60.77 | .06                |                    |                  | Coal                   | mostly powdered, some pieces have slickensides, sheared, probably was dull-banded, original texture obliterated.                                                                                   |                            |
| 22      |         | 60.77 | 60.81 | .04                |                    |                  | Coal                   | dull banded, sheared<br><br>Good stick core for rest of box                                                                                                                                        |                            |
| 22      |         | 60.81 | 60.85 | .04                |                    |                  | Coal                   | sheared, good cleat, appears to be dull banded                                                                                                                                                     |                            |
| 22      |         | 60.85 | 60.87 | .02                |                    |                  | Coal                   | broken pieces, dull banded                                                                                                                                                                         |                            |
| 22      |         | 60.87 | 60.94 | .07                |                    |                  | Coal                   | dull banded, shear planes                                                                                                                                                                          |                            |
| 22      |         | 60.94 | 60.98 | .04                |                    |                  | Coal                   | dull banded, sheared                                                                                                                                                                               |                            |
| 22      |         | 60.98 | 61.10 | .12                |                    |                  | Coal                   | dull lustrous, rare shear planes, bright bands                                                                                                                                                     |                            |
| 22      |         | 61.10 | 61.13 | .03                |                    |                  | Coal                   | dull banded                                                                                                                                                                                        |                            |
| 22      |         | 61.13 | 61.18 | .05                |                    |                  | Coal                   | dull and shear planes                                                                                                                                                                              |                            |



PR-FALLING CREEK 83A

CONFIDENTIAL

COAL ANALYSES

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TABLE 5  
VITRINITE REFLECTANCE

| DH 83-14         |           | DH 83-17         |           |
|------------------|-----------|------------------|-----------|
| <u>depth (m)</u> | <u>Ro</u> | <u>depth (m)</u> | <u>Ro</u> |
| 12               | 1.51      | 60               | 1.11      |
| 42               | 1.39      | 78               | 1.11      |
| 75               | 1.37      | 99               | 1.09      |
| 121              | 1.29      | 109              | 1.24      |
| 139              | 1.43      | 117              | 1.17      |
| 171              | 1.39      | 134              | 1.25      |
| 188              | 1.51      | 165              | 1.21      |
| 209              | 1.43      | 222              | 1.29      |
| 263              | 1.63      | 222              | 1.29      |
| 302              | 1.58      | 252              | 1.26      |
| 323              | 1.64      | 284              | 1.28      |
|                  |           | 327              | 1.31      |
|                  |           | 356              | 1.35      |
|                  |           | 379              | 1.19      |
| DH 83-18         |           | DH 83-21         |           |
| <u>depth (m)</u> | <u>Ro</u> | <u>depth (m)</u> | <u>Ro</u> |
| 25               | 1.09      | 50               | 1.25      |
| 42               | 1.15      | 70               | 1.20      |
| 70               | 1.16      | 82               | 1.13      |
| 104              | 1.19      | 90               | 1.27      |
| 144              | 1.14      | 120              | 1.25      |
| 182              | 1.14      | 140              | 1.27      |
| 194              | 1.19      | 172              | 1.30      |
|                  |           | 198              | 1.35      |
|                  |           | 208              | 1.38      |
|                  |           | 252              | 1.33      |
|                  |           | 254              | 1.40      |
|                  |           | 268              | 1.32      |
|                  |           | 286              | 1.33      |
|                  |           | 308              | 1.47      |
| DH 83-19         |           |                  |           |
| <u>depth (m)</u> | <u>Ro</u> |                  |           |
| 75               | 1.22      |                  |           |
| 112              | 1.23      |                  |           |
| 143              | 1.19      |                  |           |
| 154              | 1.38      |                  |           |
| 172              | 1.32      |                  |           |
| 209              | 1.36      |                  |           |
| 234              | 1.42      |                  |           |

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TABLE 6  
Coal Quality and Petrography  
GETHING FORMATION      BRENDA SEAM

Coded

| D.H.  | Ply  | % MACERALS (mmf) |      |     |      |     |              | Dry Ash Free Prox. |         |       |               |         |               |
|-------|------|------------------|------|-----|------|-----|--------------|--------------------|---------|-------|---------------|---------|---------------|
|       |      | V                | SF   | F   | OI   | L   | Total Inerts | FSI                | (Ash)   | VM    | C.V. (Btu/lb) | MmRo    | *Predicted VM |
| 83-18 | X    | 62.3             | 23.6 | 2.8 | 11.2 | --  | 37.6         | 6 1/2              | (16.13) | 23.09 | 15,631        | 1.18    | 30%           |
|       | XI   | 86.5             | 5.8  | 2.3 | 5.4  | --  | 13.5         | 7 1/2              | (30.50) | 28.66 | 15,463        |         |               |
|       | XIV  | 76.7             | 14.1 | 1.6 | 7.6  | --  | 23.3         | 8                  | ( 8.62) | 24.40 | 15,716        |         |               |
| 83-21 | IV   | 50.8             | 28.8 | 4.4 | 15.6 | 0.4 | 48.8         | 2                  | (15.54) | 21.78 | 15,485        | 1.27    | 27%           |
|       | V    | 65.4             | 23.3 | 5.7 | 5.6  | --  | 36.6         | 2                  | (18.94) | 35.27 | 14,022        | Calcite |               |
|       | VI   | 57.0             | 30.3 | 4.3 | 8.4  | --  | 43.0         | 2 1/2              | ( 5.87) | 20.48 | 15,548        |         |               |
|       | VII  | 43.6             | 38.1 | 2.3 | 16.0 | --  | 56.4         | 1                  | (27.30) | 24.00 | 14,776        | Calcite |               |
|       | VIII | 80.8             | 11.7 | 2.4 | 5.1  | --  | 19.2         | 5 1/2              | ( 5.75) | 21.98 | 15,614        |         |               |
|       | IX   | 96.6             | 1.0  | 0.8 | 1.6  | --  | 3.4          | 8                  | (10.31) | 26.94 | 15,145        |         |               |
| 83-17 | I    | 64.7             | 22.1 | 3.0 | 10.1 | --  | 35.2         | 5 1/2              | ( 3.84) | 22.67 | 15,664        | 1.24    | 28%           |
|       | II   | 33.7             | 46.4 | 3.8 | 15.8 | 0.2 | 66.0         | 1                  | (12.83) | 23.80 | 15,096        |         |               |
|       | III  | 45.2             | 40.2 | 4.9 | 9.7  | --  | 54.8         | 2                  | ( 5.09) | 21.34 | 15,517        |         |               |

V      Vitrinite  
SF     Semi Fusinite  
F      Fusinite  
OI     Other Inerts  
L      Liptinite

\*For pure vitrinite

FALLING CREEK COAL ANALYSIS REPORT  
 SUB-SAMPLES  
 \*\*\*\*\*

| TOP                        | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S   | FSI | S.G.  |
|----------------------------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|------|-----|-------|
| ---                        | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | ---  | --- | ---   |
|                            | MAX SIZE | MIN SIZE | 100.0 |      |      |      |       |     |       |      |       |       |       |        |      |     |       |
| 63.22                      | 63.85    | .63      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.19 | 56.20 | 10.81 | 31.80 | 6178.  | .35  | 9.9 | 1.850 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.07 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.850 |
| 65.39                      | 65.90    | .51      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .97  | 32.79 | 12.25 | 53.99 | 10002. | .56  | .5  | 1.570 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.56 | .00   | .00   | .00   | 0.     | .00  | .5  | 1.570 |
| 65.90                      | 67.50    | 1.60     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .54  | 6.10  | 15.82 | 77.54 | 14450. | .61  | .5  | 1.350 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 4.40 | .00   | .00   | .00   | 0.     | .00  | .5  | 1.350 |
| 67.50                      | 68.80    | 1.30     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .99  | 67.49 | 10.35 | 21.17 | 4174.  | 1.25 | 9.9 | 1.980 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 4.55 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.980 |
| 68.80                      | 69.41    | .61      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .73  | 48.60 | 12.95 | 37.72 | 7392.  | 1.26 | 9.9 | 1.710 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.21 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.710 |
| <i>below 94%</i><br>138.64 | 139.39   | .75      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .92  | 74.22 | 8.99  | 15.87 | 3096.  | .26  | 9.9 | 2.110 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.90 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 2.110 |
| 139.39                     | 140.33   | .94      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .47  | 36.05 | 13.39 | 50.09 | 9613.  | .48  | 9.9 | 1.610 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.21 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.610 |
| 140.33                     | 140.61   | .28      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .96  | 76.93 | 8.37  | 13.74 | 2467.  | .15  | 9.9 | 2.150 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 5.84 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 2.150 |
| 140.61                     | 142.55   | 1.94     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .56  | 33.10 | 14.24 | 52.10 | 10000. | .60  | 9.9 | 1.570 |
|                            | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.32 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.570 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
 BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
 FSI: 9.9 INDICATES NOT TESTED

FALLING CREEK COAL ANALYSIS REPORT  
 SUB-SAMPLES  
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| TOP    | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT  | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU   | %S   | FSI  | S.G.  |
|--------|----------|----------|-------|------|------|------|-------|------|-------|------|-------|-------|-------|-------|------|------|-------|
| ----   | ----     | ----     | YIELD | MAX  | MIN  | ---- | ----  | ---- | ----  | ---- | ----  | ----  | ----  | /LB   | ---- | ---- | ----  |
|        | MAX SIZE | MIN SIZE | ----  | ---- | ---- | ---- | ----  | ---- | ----  | ---- | ----  | ----  | ----  | ----  | ---- | ---- | ----  |
| 142.55 | 142.89   | .34      | 100.0 | .00  | .00  | .0   | .0    | S    | AD    | .92  | 84.54 | 6.29  | 8.25  | 1521. | .36  | 9.9  | 2.320 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S    | AR    | 3.17 | .00   | .00   | .00   | 0.    | .00  | 9.9  | 2.320 |
| 142.89 | 143.41   | .52      | 100.0 | .00  | .00  | .0   | .0    | S    | AD    | .71  | 45.70 | 12.41 | 41.18 | 7986. | .52  | 9.9  | 1.690 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S    | AR    | 1.48 | .00   | .00   | .00   | 0.    | .00  | 9.9  | 1.690 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
 BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
 FSI: 9.9 INDICATES NOT TESTED

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FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP      | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O  | %ASH  | %VM   | %FC   | BTU    | %S  | FSI | S.G.  |
|----------|----------|----------|-------|------|------|------|-------|-----|-------|-------|-------|-------|-------|--------|-----|-----|-------|
| ---      | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---   | ---   | ---   | ---   | /LB    | --- | --- | ---   |
| MAX SIZE | MIN SIZE | MIN SIZE | ---   | ---  | ---  | ---  | ---   | --- | ---   | ---   | ---   | ---   | ---   | ---    | --- | --- | ---   |
| 76.00    | 79.62    | 3.62     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .80   | 23.77 | 20.02 | 55.41 | 11692. | .47 | 9.9 | 1.450 |
| .00      | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.37  | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.450 |
| 80.54    | 81.08    | .54      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .77   | 12.06 | 22.66 | 64.51 | 13531. | .63 | 9.9 | 1.340 |
| .00      | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.70  | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.340 |
| 81.28    | 81.65    | .37      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .78   | 13.03 | 21.34 | 64.85 | 13267. | .68 | 9.9 | 1.360 |
| .00      | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.90  | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.360 |
| 103.77   | 105.21   | 1.44     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .80   | 3.81  | 21.63 | 73.76 | 14943. | .44 | 5.5 | 1.300 |
| .00      | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.98  | .00   | .00   | .00   | 0.     | .00 | 5.5 | 1.300 |
| 105.34   | 107.31   | 1.97     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .74   | 12.74 | 20.60 | 65.92 | 13062. | .25 | 1.0 | 1.380 |
| .00      | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 6.13  | .00   | .00   | .00   | 0.     | .00 | 1.0 | 1.380 |
| 107.37   | 113.46   | 6.09     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .79   | 5.05  | 20.10 | 74.06 | 14611. | .28 | 2.0 | 1.310 |
| .00      | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 9.68  | .00   | .00   | .00   | 0.     | .00 | 2.0 | 1.310 |
| 132.98   | 133.87   | .89      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .72   | 20.04 | 23.49 | 55.75 | 11626. | .38 | 9.9 | 1.500 |
| .00      | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 4.98  | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.500 |
| 134.02   | 134.79   | .77      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .64   | 5.43  | 22.69 | 71.24 | 14120. | .51 | 9.9 | 1.310 |
| .00      | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 10.93 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.310 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

\*\*\*\*\*

| TOP   | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S   | FSI | S.G.  |
|-------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|------|-----|-------|
| ---   | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | ---  | --- | ---   |
|       | MAX SIZE | MIN SIZE | 100.0 |      |      |      |       |     |       |      |       |       |       |        |      |     |       |
|       | ---      | ---      | 100.0 | ---  | ---  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | ---    | ---  | --- | ---   |
| 41.60 | 43.21    | 1.61     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .76  | 4.13  | 21.63 | 73.48 | 14782. | 1.30 | 9.9 | 1.310 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.48 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.310 |
| 43.21 | 44.00    | .79      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.17 | 77.89 | 11.95 | 8.99  | 2118.  | .18  | 9.9 | 2.210 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.08 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 2.210 |
| 70.00 | 71.07    | 1.07     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .85  | 21.87 | 17.92 | 59.36 | 11881. | .42  | 9.9 | 1.400 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 5.80 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.400 |
| 71.07 | 71.60    | .53      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .66  | 5.26  | 21.42 | 72.66 | 14609. | .51  | 9.9 | 1.310 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 5.32 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.310 |
| 71.60 | 73.09    | 1.49     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .65  | 9.12  | 21.77 | 68.46 | 13869. | .57  | 9.9 | 1.360 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 4.71 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.360 |
| 73.09 | 74.87    | 1.78     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.13 | 75.56 | 10.29 | 13.02 | 2854.  | .15  | 9.9 | 2.070 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 4.61 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 2.070 |
| 74.87 | 75.33    | .46      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.10 | 43.35 | 16.04 | 39.51 | 8477.  | .43  | 9.9 | 1.640 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.30 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.640 |
| 95.81 | 96.00    | .19      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .87  | 20.41 | 17.95 | 60.77 | 12322. | 1.83 | 2.5 | 1.400 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.49 | .00   | .00   | .00   | 0.     | .00  | 2.5 | 1.400 |
| 96.00 | 96.72    | .72      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.01 | 84.55 | 11.31 | 3.13  | 1027.  | .09  | 9.9 | 2.470 |
|       | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.22 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 2.470 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

MAR 20 1984

HOLE: 83-18

FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP    | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S  | FSI | S.G.  |
|--------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|-----|-----|-------|
| ---    | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | --- | --- | ---   |
|        | MAX SIZE | MIN SIZE | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .85  | 15.99 | 19.21 | 63.95 | 12999. | .57 | 6.5 | 1.370 |
|        | -----    | -----    | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 5.13 | .00   | .00   | .00   | 0.     | .00 | 6.5 | 1.370 |
| 96.72  | 97.63    | .91      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
| 97.63  | 99.34    | 1.71     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        |          |          | 100.0 | .00  | .00  | .0   | 1.0   | S   | AD    | .95  | 30.21 | 19.73 | 49.11 | 10645. | .33 | 7.5 | 1.510 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 6.37 | .00   | .00   | .00   | 0.     | .00 | 7.5 | 1.510 |
| 99.34  | 100.60   | 1.26     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.59 | 75.90 | 9.91  | 12.60 | 2919.  | .10 | 0.0 | 2.060 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.70 | .00   | .00   | .00   | 0.     | .00 | 0.0 | 2.060 |
| 100.60 | 101.90   | 1.30     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.31 | 62.48 | 15.52 | 20.69 | 4970.  | .15 | 9.9 | 1.870 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.37 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.870 |
| 101.90 | 104.57   | 2.67     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .85  | 8.55  | 22.11 | 68.49 | 14239. | .35 | 8.0 | 1.320 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 4.60 | .00   | .00   | .00   | 0.     | .00 | 8.0 | 1.320 |
| 104.57 | 104.73   | .16      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.01 | 46.23 | 16.81 | 35.95 | 7709.  | .30 | 9.9 | 1.680 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.44 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.680 |
| 155.43 | 157.00   | 1.57     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.11 | 66.81 | 12.66 | 19.42 | 4382.  | .23 | 9.9 | 1.940 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.06 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.940 |
| 158.88 | 160.10   | 1.22     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .80  | 9.36  | 18.89 | 70.95 | 14007. | .51 | 9.9 | 1.330 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 8.38 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.330 |
| 160.10 | 161.52   | 1.42     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .67  | 4.61  | 20.26 | 74.46 | 14827. | .56 | 9.9 | 1.310 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.31 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.310 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

MAR 20 1984



FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP<br>--- | BASE<br>--- | INT<br>--- | SIEVE<br>YIELD | S.G.<br>MAX | S.G.<br>MIN | SINK | FLOAT | CAT | BASIS | %H2O  | %ASH  | %VM   | %FC   | BTU<br>/LB | %S  | FSI | S.G.  |
|------------|-------------|------------|----------------|-------------|-------------|------|-------|-----|-------|-------|-------|-------|-------|------------|-----|-----|-------|
| ---        | MAX SIZE    | MIN SIZE   | ---            | ---         | ---         | ---  | ---   | --- | ---   | ---   | ---   | ---   | ---   | ---        | --- | --- | ---   |
| 30.08      | 30.82       | .74        | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | .89   | 6.43  | 20.83 | 71.85 | 14457.     | .46 | 9.9 | 1.320 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | 2.96  | .00   | .00   | .00   | 0.         | .00 | 9.9 | 1.320 |
| 30.82      | 32.00       | 1.18       | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | .85   | 25.00 | 21.08 | 53.07 | 10810.     | .34 | 9.9 | 1.410 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | 3.88  | .00   | .00   | .00   | 0.         | .00 | 9.9 | 1.410 |
| 38.00      | 38.84       | .84        | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | .56   | 39.17 | 35.86 | 24.41 | 6780.      | .23 | 9.9 | 1.920 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | 1.17  | .00   | .00   | .00   | 0.         | .00 | 9.9 | 1.920 |
| 38.84      | 39.56       | .72        | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | .82   | 8.29  | 23.16 | 67.73 | 14148.     | .46 | 9.9 | 1.340 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | 1.88  | .00   | .00   | .00   | 0.         | .00 | 9.9 | 1.340 |
| 44.56      | 45.91       | 1.35       | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | .92   | 17.47 | 18.30 | 63.31 | 12633.     | .43 | 9.9 | 1.370 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | 12.67 | .00   | .00   | .00   | 0.         | .00 | 9.9 | 1.370 |
| 45.91      | 46.33       | .42        | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | .37   | 54.12 | 44.20 | 1.31  | 2892.      | .11 | 9.9 | 2.400 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | .56   | .00   | .00   | .00   | 0.         | .00 | 9.9 | 2.400 |
| 46.33      | 46.94       | .61        | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | .79   | 6.69  | 26.99 | 65.53 | 14297.     | .58 | 9.9 | 1.310 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | 2.35  | .00   | .00   | .00   | 0.         | .00 | 9.9 | 1.310 |
| 46.94      | 48.00       | 1.06       | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | 1.12  | 70.50 | 11.12 | 17.26 | 3936.      | .18 | 9.9 | 2.000 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | 5.26  | .00   | .00   | .00   | 0.         | .00 | 9.9 | 2.000 |
| 64.54      | 65.80       | 1.26       | 100.0          | .00         | .00         | .0   | .0    | S   | AD    | .95   | 16.68 | 19.26 | 63.11 | 12736.     | .78 | 9.9 | 1.370 |
|            | .00         | .00        | 100.0          | .00         | .00         | .0   | .0    | S   | AR    | 2.01  | .00   | .00   | .00   | 0.         | .00 | 9.9 | 1.370 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP    | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S  | FSI | S.G.  |
|--------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|-----|-----|-------|
| ---    | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | --- | --- | ---   |
|        | MAX SIZE | MIN SIZE |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | -----    | -----    |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
| 70.04  | 72.34    | 2.30     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .82  | 13.82 | 14.84 | 70.52 | 13309. | .72 | 9.9 | 1.380 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 4.24 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.380 |
| 74.02  | 74.58    | .56      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .98  | 41.74 | 15.76 | 41.52 | 8685.  | .37 | 9.9 | 1.530 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 6.20 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.530 |
| 74.58  | 74.98    | .40      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.11 | 82.41 | 6.65  | 9.83  | 2032.  | .09 | 9.9 | 2.180 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.60 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 2.180 |
| 74.98  | 75.42    | .44      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .89  | 14.61 | 21.40 | 63.10 | 12632. | .52 | 9.9 | 1.390 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.59 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.390 |
| 107.52 | 109.37   | 1.85     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .96  | 4.76  | 20.48 | 73.80 | 14636. | .35 | 1.5 | 1.300 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.79 | .00   | .00   | .00   | 0.     | .00 | 1.5 | 1.300 |
| 109.37 | 109.80   | .43      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .71  | 19.41 | 28.83 | 51.05 | 11567. | .28 | 3.5 | 1.490 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.66 | .00   | .00   | .00   | 0.     | .00 | 3.5 | 1.490 |
| 109.80 | 110.92   | 1.12     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.19 | 33.35 | 17.68 | 47.78 | 10165. | .25 | 7.5 | 1.510 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.46 | .00   | .00   | .00   | 0.     | .00 | 7.5 | 1.510 |
| 112.66 | 113.86   | 1.20     |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .84  | 5.72  | 21.23 | 72.21 | 14472. | .34 | 2.5 | 1.300 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.47 | .00   | .00   | .00   | 0.     | .00 | 2.5 | 1.300 |
| 113.83 | 114.48   | .65      |       |      |      |      |       |     |       |      |       |       |       |        |     |     |       |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .80  | 18.23 | 27.25 | 53.72 | 11604. | .27 | 2.0 | 1.490 |
|        |          |          | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.56 | .00   | .00   | .00   | 0.     | .00 | 2.0 | 1.490 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

MAR 20 1984

FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP    | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S   | FSI | S.G.  |
|--------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|------|-----|-------|
| ---    | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | ---  | --- | ---   |
|        | MAX SIZE | MIN SIZE | ---   | ---  | ---  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | ---    | ---  | --- | ---   |
| 114.48 | 115.85   | 1.37     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .77  | 13.57 | 19.92 | 65.74 | 13369. | .34  | 5.0 | 1.350 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.87 | .00   | .00   | .00   | 0.     | .00  | 5.0 | 1.350 |
| 117.11 | 118.50   | 1.39     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .83  | 17.77 | 21.46 | 59.94 | 11944. | 1.69 | 9.9 | 1.390 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.07 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.390 |
| 117.59 | 117.89   | .30      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.70 | 67.39 | 10.80 | 20.11 | 4339.  | .24  | 9.9 | 1.920 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.52 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.920 |
| 154.55 | 157.40   | 2.85     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .82  | 29.56 | 17.77 | 51.85 | 10450. | .29  | 9.9 | 1.510 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.22 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.510 |
| 209.64 | 212.12   | 2.48     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .74  | 11.84 | 16.68 | 70.74 | 13502. | .39  | 9.9 | 1.350 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 6.87 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.350 |
| 212.12 | 213.79   | 1.67     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.07 | 52.91 | 12.16 | 33.86 | 6849.  | .36  | 9.9 | 1.740 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.14 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.740 |
| 225.96 | 228.88   | 2.92     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .83  | 5.01  | 18.14 | 76.02 | 14548. | .37  | 9.9 | 1.350 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 3.38 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.350 |
| 230.06 | 234.32   | 4.26     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .78  | 4.85  | 16.34 | 78.03 | 14660. | .38  | 9.9 | 1.320 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 8.92 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.320 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

MAR 20 1984

FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP    | BASE     | INT      | SIEVE | S.G. | S.G. |      |       |     |       |      |       |       |       | BTU    |     |     |       |
|--------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|-----|-----|-------|
| ---    | ---      | ---      | YIELD | MAX  | MIN  | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | /LB    | %S  | FSI | S.G.  |
|        | MAX SIZE | MIN SIZE | ---   | ---  | ---  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | ---    | --- | --- | ---   |
| 79.18  | 80.25    | 1.07     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .84  | 28.13 | 16.33 | 54.70 | 10842. | .65 | 9.9 | 1.490 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 8.56 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.490 |
| 213.35 | 214.61   | 1.26     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .83  | 13.79 | 18.05 | 67.33 | 12941. | .65 | 9.9 | 1.370 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.18 | .00   | .00   | .00   | 0.     | .00 | 9.9 | 1.370 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

MAR 20 1984

FALLING CREEK COAL ANALYSIS REPORT  
 SUB-SAMPLES  
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| TOP    | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S   | FSI | S.G.  |
|--------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|------|-----|-------|
| ---    | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | ---  | --- | ---   |
|        | MAX SIZE | MIN SIZE |       |      |      |      |       |     |       |      |       |       |       |        |      |     |       |
| 48.14  | 48.93    | .79      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .85  | 9.03  | 19.32 | 70.80 | 14022. | 1.66 | 9.9 | 1.350 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.78 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.350 |
| 48.93  | 49.59    | .66      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.45 | 84.50 | 6.78  | 7.27  | 1563.  | .17  | 9.9 | 2.250 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.89 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 2.250 |
| 49.59  | 50.18    | .59      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .94  | 10.32 | 22.01 | 66.73 | 13822. | .65  | 9.9 | 1.330 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.39 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.330 |
| 60.32  | 62.25    | 1.93     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .92  | 3.20  | 19.65 | 76.23 | 14886. | .41  | 9.9 | 1.300 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.97 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.300 |
| 62.25  | 62.48    | .23      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .77  | 25.66 | 30.94 | 42.63 | 9980.  | .22  | 9.9 | 1.630 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.68 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.630 |
| 62.48  | 62.82    | .34      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .92  | 11.55 | 19.57 | 67.96 | 13524. | .33  | 9.9 | 1.370 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.39 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.370 |
| 143.34 | 143.69   | .35      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .81  | 19.87 | 16.92 | 62.40 | 12222. | .34  | 1.0 | 1.420 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.17 | .00   | .00   | .00   | 0.     | .00  | 1.0 | 1.420 |
| 145.76 | 146.25   | .49      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .91  | 24.36 | 15.76 | 58.97 | 11466. | .30  | 1.0 | 1.480 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.96 | .00   | .00   | .00   | 0.     | .00  | 1.0 | 1.480 |
| 146.25 | 146.77   | .52      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.45 | 67.53 | 10.67 | 20.35 | 4359.  | .20  | 9.9 | 1.960 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.46 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.960 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
 BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
 FSI: 9.9 INDICATES NOT TESTED

FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP    | BASE     | INT      | SIEVE | S.G.  | S.G.  |       |       |       |       |       |       |       |       | BTU    |       |       |       |
|--------|----------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|
| ---    | ---      | ---      | YIELD | MAX   | MIN   | SINK  | FLOAT | CAT   | BASIS | %H2O  | %ASH  | %VM   | %FC   | /LB    | %S    | FSI   | S.G.  |
|        | MAX SIZE | MIN SIZE | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | -----  | ----- | ----- | ----- |
| 146.77 | 148.47   | 1.70     | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .87   | 15.41 | 18.24 | 65.48 | 12965. | .27   | 2.0   | 1.370 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 7.54  | .00   | .00   | .00   | 0.     | .00   | 2.0   | 1.370 |
| 148.47 | 148.72   | .25      | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .68   | 18.81 | 28.40 | 52.11 | 11289. | .21   | 2.0   | 1.510 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 1.20  | .00   | .00   | .00   | 0.     | .00   | 2.0   | 1.510 |
| 148.72 | 150.32   | 1.60     | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .97   | 5.81  | 19.09 | 74.13 | 14493. | .25   | 2.5   | 1.320 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 1.74  | .00   | .00   | .00   | 0.     | .00   | 2.5   | 1.320 |
| 150.32 | 150.85   | .53      | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .91   | 27.05 | 17.29 | 54.75 | 10644. | .19   | 1.0   | 1.500 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 2.62  | .00   | .00   | .00   | 0.     | .00   | 1.0   | 1.500 |
| 150.85 | 152.36   | 1.51     | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .91   | 5.70  | 20.53 | 72.86 | 14582. | .30   | 9.9   | 1.310 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 4.21  | .00   | .00   | .00   | 0.     | .00   | 9.9   | 1.310 |
| 152.36 | 152.74   | .38      | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .79   | 10.23 | 23.97 | 65.01 | 13477. | .32   | 9.9   | 1.360 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 5.62  | .00   | .00   | .00   | 0.     | .00   | 9.9   | 1.360 |
| 165.47 | 166.37   | .90      | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .89   | 8.13  | 18.44 | 72.54 | 14041. | .51   | 9.9   | 1.330 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 2.44  | .00   | .00   | .00   | 0.     | .00   | 9.9   | 1.330 |
| 166.37 | 166.71   | .34      | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .62   | 22.30 | 30.78 | 46.30 | 10663. | .56   | 9.9   | 1.580 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 2.89  | .00   | .00   | .00   | 0.     | .00   | 9.9   | 1.580 |
| 196.78 | 197.94   | 1.16     | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .82   | 5.64  | 19.29 | 74.25 | 14558. | .36   | 9.9   | 1.320 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 4.42  | .00   | .00   | .00   | 0.     | .00   | 9.9   | 1.320 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

MAR 20 1984

FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP    | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S   | FSI | S.G.  |
|--------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|------|-----|-------|
| ---    | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | ---  | --- | ---   |
|        | MAX SIZE | MIN SIZE | 100.0 |      |      |      |       |     |       |      |       |       |       |        |      |     |       |
| 197.94 | 201.01   | 3.07     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .72  | 13.09 | 25.33 | 60.86 | 13109. | .50  | 9.9 | 1.390 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.26 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.390 |
| 198.16 | 200.14   | 1.98     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .81  | 10.72 | 22.28 | 66.19 | 13711. | .55  | 9.9 | 1.350 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.66 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.350 |
| 199.80 | 200.77   | .97      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .99  | 60.28 | 13.01 | 25.72 | 4522.  | .24  | 9.9 | 1.850 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.57 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.850 |
| 227.97 | 228.27   | .30      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .76  | 14.05 | 16.49 | 68.70 | 13097. | .50  | 9.9 | 1.410 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | .96  | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.410 |
| 228.27 | 228.46   | .19      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .50  | 33.13 | 33.83 | 32.54 | 8315.  | .33  | 9.9 | 1.790 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | .60  | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.790 |
| 228.46 | 229.64   | 1.18     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .89  | 8.09  | 18.89 | 72.13 | 13739. | .47  | 9.9 | 1.360 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.55 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.360 |
| 229.64 | 229.80   | .16      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .72  | 22.33 | 30.04 | 46.91 | 10704. | .31  | 9.9 | 1.550 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | .91  | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.550 |
| 229.80 | 230.02   | .22      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .87  | 16.65 | 21.82 | 60.66 | 12651. | .38  | 9.9 | 1.400 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.84 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.400 |
| 232.08 | 232.47   | .39      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .90  | 13.81 | 18.16 | 67.13 | 12810. | 1.53 | 9.9 | 1.420 |
|        | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.68 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.420 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP       | BASE     | INT      | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S   | FSI | S.G.  |
|-----------|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|------|-----|-------|
| ---       | ---      | ---      | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | ---  | --- | ---   |
|           | MAX SIZE | MIN SIZE | ---   | ---  | ---  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | ---    | ---  | --- | ---   |
| 232.47    | 232.65   | .18      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .89  | 35.08 | 14.44 | 49.59 | 9442.  | .23  | 9.9 | 1.610 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.09 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.610 |
| 232.65    | 233.28   | .63      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.03 | 15.90 | 16.47 | 66.60 | 12757. | .31  | 9.9 | 1.420 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.63 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.420 |
| 233.28    | 233.50   | .22      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .84  | 66.06 | 13.28 | 19.82 | 3792.  | .12  | 9.9 | 1.990 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | .98  | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.990 |
| 233.50    | 233.90   | .40      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .92  | 4.92  | 19.15 | 75.01 | 14817. | .48  | 9.9 | 1.310 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.35 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.310 |
| 233.90    | 234.36   | .46      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.17 | 44.05 | 13.59 | 41.19 | 8283.  | .33  | 9.9 | 1.650 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 1.65 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.650 |
| 285.08    | 285.79   | .71      | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .90  | 16.53 | 17.23 | 65.34 | 12911. | 1.06 | 9.9 | 1.390 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 6.51 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.390 |
| 34 285.79 | 286.85   | 1.06     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | 1.56 | 72.12 | 8.20  | 18.12 | 3503.  | .33  | 9.9 | 1.940 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.11 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.940 |
| 286.01    | 287.17   | 1.16     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .76  | 12.27 | 15.85 | 71.12 | 13627. | .75  | 9.9 | 1.340 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 2.42 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.340 |
| 304.16    | 305.27   | 1.11     | 100.0 | .00  | .00  | .0   | .0    | S   | AD    | .88  | 21.09 | 14.26 | 63.77 | 12025. | 1.26 | 9.9 | 1.390 |
|           | .00      | .00      | 100.0 | .00  | .00  | .0   | .0    | S   | AR    | 4.01 | .00   | .00   | .00   | 0.     | .00  | 9.9 | 1.390 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED



FALLING CREEK COAL ANALYSIS REPORT  
SUB-SAMPLES

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| TOP    | BASE     | INT      | SIEVE | S.G.  | S.G.  |       |       |       |       |       |       |       |       | BTU    |       |       |       |
|--------|----------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|
| ----   | ----     | ----     | YIELD | MAX   | MIN   | SINK  | FLOAT | CAT   | BASIS | %H2O  | %ASH  | %VM   | %FC   | /LB    | %S    | FSI   | S.G.  |
|        | MAX SIZE | MIN SIZE | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | -----  | ----- | ----- | ----- |
| 305.27 | 305.70   | .43      | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .44   | 60.04 | 19.78 | 19.74 | 3885.  | ****  | 9.9   | 1.840 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 3.17  | .00   | .00   | .00   | 0.     | .00   | 9.9   | 1.840 |
| 306.32 | 307.20   | .88      | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | 1.47  | 69.23 | 8.25  | 21.05 | 3976.  | .35   | 9.9   | 1.900 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | 2.76  | .00   | .00   | .00   | 0.     | .00   | 9.9   | 1.900 |
| 306.60 | 307.07   | .47      | 100.0 | .00   | .00   | .0    | .0    | S     | AD    | .68   | 4.68  | 21.24 | 73.40 | 14748. | .48   | 9.9   | 1.300 |
|        | .00      | .00      | 100.0 | .00   | .00   | .0    | .0    | S     | AR    | .85   | .00   | .00   | .00   | 0.     | .00   | 9.9   | 1.300 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY  
FSI: 9.9 INDICATES NOT TESTED

MAR 20 1984

FALLING CREEK COAL ANALYSIS REPORT  
COMPOSITES  
\*\*\*\*\*

| TOP   | BASE  | INT  | SIEVE | S.G. | S.G. |      |       |     |       |      |       |       |       | BTU    |     |     |      |
|-------|-------|------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|-----|-----|------|
| ---   | ---   | ---  | YIELD | MAX  | MIN  | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | /LB    | %S  | FSI | S.G. |
| ---   | ---   | ---  | ---   | ---  | ---  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | ---    | --- | --- | ---  |
| 65.39 | 67.50 | 2.11 | 100.0 | .00  | .00  | .0   | .0    | C   | AD    | .90  | 14.43 | 14.42 | 70.25 | 0.     | .00 | .0  | .000 |
|       | .00   | .00  | 8.9   | .00  | .00  | .0   | .0    | C   | AD    | .79  | 19.04 | 15.14 | 65.03 | 12106. | .68 | .0  | .000 |
|       | .50   | .00  | 33.4  | 1.40 | .00  | .0   | 66.1  | C   | AD    | 1.13 | 3.80  | 14.79 | 80.28 | 14689. | .68 | .0  | .000 |
|       | 6.00  | .50  | 33.4  | 1.60 | 1.40 | .0   | 13.2  | C   | AD    | 1.09 | 21.38 | 13.58 | 63.95 | 11751. | .59 | .0  | .000 |
|       |       |      | 33.4  | 1.80 | 1.60 | .0   | 4.8   | C   | AD    | 1.43 | 41.34 | 13.59 | 43.64 | 8221.  | .61 | .0  | .000 |
|       |       |      | 33.4  | .00  | 1.80 | 15.9 | .0    | C   | AD    | 1.13 | 67.91 | 10.12 | 20.84 | 3644.  | .50 | .0  | .000 |
|       | 19.00 | 6.00 | 57.8  | 1.40 | .00  | .0   | 75.9  | C   | AD    | 1.53 | 6.65  | 15.68 | 76.14 | 14234. | .61 | .0  | .000 |
|       |       |      | 57.8  | 1.60 | 1.40 | .0   | 17.3  | C   | AD    | .99  | 20.57 | 14.08 | 64.36 | 11894. | .52 | .0  | .000 |
|       |       |      | 57.8  | 1.80 | 1.60 | .0   | 2.6   | C   | AD    | 1.13 | 36.61 | 17.93 | 44.33 | 8686.  | .51 | .0  | .000 |
|       |       |      | 57.8  | .00  | 1.80 | 4.2  | .0    | C   | AD    | 1.64 | 67.89 | 10.58 | 19.89 | 3601.  | .47 | .0  | .000 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY

MAR 20 1984

FALLING CREEK COAL ANALYSIS REPORT  
COMPOSITES

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| TOP    | BASE     | INT      | SIEVE | S.G.  | S.G.  |       |       |     |       |       |       |       |       | BTU    |     |     |       |
|--------|----------|----------|-------|-------|-------|-------|-------|-----|-------|-------|-------|-------|-------|--------|-----|-----|-------|
| ---    | ---      | ---      | YIELD | MAX   | MIN   | SINK  | FLOAT | CAT | BASIS | %H2O  | %ASH  | %VM   | %FC   | /LB    | %S  | FSI | S.G.  |
|        | MAX SIZE | MIN SIZE | ----- | ----- | ----- | ----- | ----- | --- | ----- | ----- | ----- | ----- | ----- | ---    | --- | --- | ----- |
| 107.37 | 113.46   | 6.09     | 8.4   | .00   | .00   | .0    | .0    | C   | AD    | .98   | 5.84  | 21.40 | 71.78 | 14267. | .28 | .0  | .000  |
|        | .50      | .00      | 35.9  | 1.40  | .00   | .0    | 92.8  | C   | AD    | 1.29  | 3.20  | 20.42 | 75.09 | 14874. | .29 | .0  | .000  |
|        | 6.00     | .50      | 35.9  | 1.60  | 1.40  | .0    | 4.8   | C   | AD    | 1.44  | 17.64 | 19.79 | 61.13 | 12126. | .22 | .0  | .000  |
|        |          |          | 35.9  | 1.80  | 1.60  | .0    | 1.0   | C   | AD    | 1.45  | 36.13 | 18.38 | 44.04 | 8736.  | .16 | .0  | .000  |
|        |          |          | 35.9  | .00   | 1.80  | 1.4   | .0    | C   | AD    | 1.36  | 65.80 | 15.40 | 17.44 | 2902.  | .08 | .0  | .000  |
| 19.00  | 6.00     |          | 55.7  | 1.40  | .00   | .0    | 95.6  | C   | AD    | .70   | 4.05  | 20.93 | 74.32 | 14732. | .27 | .0  | .000  |
|        |          |          | 55.7  | 1.60  | 1.40  | .0    | 3.9   | C   | AD    | .65   | 19.60 | 20.83 | 58.92 | 11586. | .18 | .0  | .000  |
|        |          |          | 55.7  | 1.80  | 1.60  | .0    | .1    | C   | AD    | 1.06  | 47.28 | 16.80 | 34.86 | 7036.  | .08 | .0  | .000  |
|        |          |          | 55.7  | .00   | 1.80  | .4    | .0    | C   | AD    | .45   | 65.66 | 15.05 | 18.84 | 2726.  | .07 | .0  | .000  |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY

MAR 20 1984

FALLING CREEK COAL ANALYSIS REPORT  
COMPOSITES

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| TOP | BASE     | INT      | SIEVE | S.G. | S.G. |      |       |     |       |      |       |       |       | BTU    |     |     |      |
|-----|----------|----------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|-----|-----|------|
| --- | ---      | ---      | YIELD | MAX  | MIN  | SINK | FLOAT | CAT | BASIS | ZH2O | ZASH  | ZVM   | ZFC   | /LB    | ZS  | FSI | S.G. |
|     | MAX SIZE | MIN SIZE | ---   | ---  | ---  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | ---    | --- | --- | ---  |
|     | 101.90   | 104.57   | 2.67  |      |      |      |       |     |       |      |       |       |       |        |     |     |      |
|     | .50      | .00      | 15.6  | .00  | .00  | .0   | .0    | C   | AD    | .64  | 11.85 | 22.05 | 65.46 | 13258. | .35 | .0  | .000 |
|     | 6.00     | .50      | 43.2  | 1.40 | .00  | .0   | 85.9  | C   | AD    | .65  | 2.92  | 24.99 | 71.44 | 15103. | .39 | .0  | .000 |
|     |          |          | 43.2  | 1.60 | 1.40 | .0   | 7.3   | C   | AD    | .75  | 25.92 | 18.93 | 54.40 | 11266. | .26 | .0  | .000 |
|     |          |          | 43.2  | 1.80 | 1.60 | .0   | 3.5   | C   | AD    | 1.02 | 44.11 | 17.01 | 37.86 | 7995.  | .26 | .0  | .000 |
|     |          |          | 43.2  | .00  | 1.80 | 3.3  | .0    | C   | AD    | .86  | 72.02 | 12.04 | 15.08 | 2890.  | .10 | .0  | .000 |
|     | 19.00    | 6.00     | 41.1  | 1.40 | .00  | .0   | 81.3  | C   | AD    | .57  | 3.62  | 23.10 | 72.71 | 14999. | .37 | .0  | .000 |
|     |          |          | 41.1  | 1.60 | 1.40 | .0   | 12.5  | C   | AD    | .63  | 25.32 | 18.43 | 55.62 | 11270. | .29 | .0  | .000 |
|     |          |          | 41.1  | 1.80 | 1.60 | .0   | 5.1   | C   | AD    | .77  | 39.14 | 17.78 | 42.31 | 8908.  | .30 | .0  | .000 |
|     |          |          | 41.1  | .00  | 1.80 | 1.1  | .0    | C   | AD    | .89  | 72.91 | 15.08 | 11.12 | 2864.  | .05 | .0  | .000 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECIEVED AD=AIR DRY DR=DRY

FALLING CREEK COAL ANALYSIS REPORT  
COMPOSITES  
\*\*\*\*\*

| TOP    | BASE   | INT  | SIEVE | S.G. | S.G. |      |       |     |       |      |       |       |       | BTU    |     |     |      |
|--------|--------|------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|-----|-----|------|
| ---    | ---    | ---  | YIELD | MAX  | MIN  | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | /LB    | %S  | FSI | S.G. |
| ---    | ---    | ---  | ---   | ---  | ---  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | ---    | --- | --- | ---  |
| 107.52 | 115.85 | 8.33 |       |      |      |      |       |     |       |      |       |       |       |        |     |     |      |
|        | .00    | .00  | 100.0 | .00  | .00  | .0   | .0    | C   | AD    | .77  | 13.74 | 21.51 | 63.98 | 0.     | .00 | .0  | .000 |
|        | .50    | .00  | 10.6  | .00  | .00  | .0   | .0    | C   | AD    | 1.00 | 9.08  | 23.07 | 66.85 | 13751. | .34 | .0  | .000 |
|        | 6.00   | .50  | 35.6  | 1.40 | .00  | .0   | 82.1  | C   | AD    | 1.05 | 3.16  | 21.14 | 74.65 | 14870. | .39 | .0  | .000 |
|        |        |      | 35.6  | 1.60 | 1.40 | .0   | 6.1   | C   | AD    | 1.37 | 23.47 | 18.14 | 57.02 | 10294. | .28 | .0  | .000 |
|        |        |      | 35.6  | 1.80 | 1.60 | .0   | 4.1   | C   | AD    | 1.15 | 34.84 | 22.76 | 41.25 | 8853.  | .20 | .0  | .000 |
|        |        |      | 35.6  | .00  | 1.80 | 7.8  | .0    | C   | AD    | 1.52 | 65.07 | 17.75 | 15.66 | 3515.  | .12 | .0  | .000 |
|        | 19.00  | 6.00 | 53.7  | 1.40 | .00  | .0   | 65.1  | C   | AD    | 1.16 | 4.45  | 20.05 | 74.34 | 14680. | .34 | .0  | .000 |
|        |        |      | 53.7  | 1.60 | 1.40 | .0   | 12.7  | C   | AD    | 1.12 | 22.88 | 19.72 | 56.28 | 11219. | .28 | .0  | .000 |
|        |        |      | 53.7  | 1.80 | 1.60 | .0   | 12.1  | C   | AD    | 1.10 | 34.34 | 22.91 | 41.65 | 8828.  | .22 | .0  | .000 |
|        |        |      | 53.7  | .00  | 1.80 | 10.1 | .0    | C   | AD    | 1.59 | 68.92 | 12.83 | 16.66 | 3257.  | .11 | .0  | .000 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY

MAR 20 1984

FALLING CREEK COAL ANALYSIS REPORT  
COMPOSITES

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| TOP    | BASE   | INT  | SIEVE | S.G. | S.G. | SINK | FLOAT | CAT | BASIS | %H2O | %ASH  | %VM   | %FC   | BTU    | %S  | FSI | S.G. |
|--------|--------|------|-------|------|------|------|-------|-----|-------|------|-------|-------|-------|--------|-----|-----|------|
| ---    | ---    | ---  | YIELD | MAX  | MIN  | ---  | ---   | --- | ---   | ---  | ---   | ---   | ---   | /LB    | --- | --- | ---  |
| 60.32  | 62.82  | 2.50 | 100.0 | .00  | .00  | .0   | .0    | C   | AD    | .82  | 6.80  | 21.10 | 71.28 | 0.     | .00 | .0  | .000 |
|        | .00    | .00  | 6.3   | .00  | .00  | .0   | .0    | C   | AD    | .67  | 4.60  | 21.73 | 73.00 | 14418. | .42 | .0  | .000 |
|        | 6.00   | .50  | 41.8  | 1.40 | .00  | .0   | 90.5  | C   | AD    | .81  | 2.58  | 21.63 | 74.98 | 14610. | .42 | .0  | .000 |
|        |        |      | 41.8  | 1.60 | 1.40 | .0   | 3.9   | C   | AD    | .65  | 19.83 | 19.95 | 59.57 | 11762. | .25 | .0  | .000 |
|        |        |      | 41.8  | 1.80 | 1.60 | .0   | 1.9   | C   | AD    | .57  | 36.50 | 24.83 | 38.10 | 8201.  | .19 | .0  | .000 |
|        |        |      | 41.8  | .00  | 1.80 | 3.7  | .0    | C   | AD    | .42  | 49.65 | 31.68 | 18.25 | 4382.  | .11 | .0  | .000 |
|        | 19.00  | 6.00 | 51.9  | 1.40 | .00  | .0   | 88.2  | C   | AD    | .59  | 3.00  | 19.84 | 76.57 | 15005. | .39 | .0  | .000 |
|        |        |      | 51.9  | 1.60 | 1.40 | .0   | 5.9   | C   | AD    | .52  | 18.64 | 22.56 | 58.28 | 11290. | .27 | .0  | .000 |
|        |        |      | 51.9  | 1.80 | 1.60 | .0   | 3.7   | C   | AD    | .56  | 34.60 | 25.11 | 39.73 | 8544.  | .20 | .0  | .000 |
|        |        |      | 51.9  | .00  | 1.80 | 2.2  | .0    | C   | AD    | .56  | 46.47 | 32.20 | 20.77 | 5658.  | .12 | .0  | .000 |
| 146.77 | 152.74 | 5.97 | 100.0 | .00  | .00  | .0   | .0    | C   | AD    | .74  | 11.10 | 20.01 | 68.15 | 0.     | .00 | .0  | .000 |
|        | .00    | .00  | 12.6  | .00  | .00  | .0   | .0    | C   | AD    | .96  | 16.12 | 19.44 | 63.48 | 12562. | .26 | .0  | .000 |
|        | 6.00   | .50  | 39.1  | 1.40 | .00  | .0   | 83.9  | C   | AD    | .65  | 3.15  | 20.83 | 75.37 | 15002. | .29 | .0  | .000 |
|        |        |      | 39.1  | 1.60 | 1.40 | .0   | 6.5   | C   | AD    | .78  | 20.00 | 18.44 | 60.78 | 11816. | .21 | .0  | .000 |
|        |        |      | 39.1  | 1.80 | 1.60 | .0   | 1.4   | C   | AD    | .84  | 36.11 | 20.29 | 42.76 | 8723.  | .17 | .0  | .000 |
|        |        |      | 39.1  | .00  | 1.80 | 8.1  | .0    | C   | AD    | 1.18 | 73.17 | 12.52 | 13.13 | 2197.  | .07 | .0  | .000 |
|        | 19.00  | 6.00 | 48.2  | 1.40 | .00  | .0   | 79.9  | C   | AD    | .61  | 3.39  | 19.85 | 76.15 | 14978. | .28 | .0  | .000 |
|        |        |      | 48.2  | 1.60 | 1.40 | .0   | 9.5   | C   | AD    | .70  | 18.92 | 20.64 | 59.74 | 11702. | .22 | .0  | .000 |
|        |        |      | 48.2  | 1.80 | 1.60 | .0   | 1.8   | C   | AD    | .79  | 37.21 | 25.21 | 36.79 | 7676.  | .15 | .0  | .000 |
|        |        |      | 48.2  | .00  | 1.80 | 8.7  | .0    | C   | AD    | .79  | 69.41 | 15.53 | 14.27 | 2474.  | .07 | .0  | .000 |

CATEGORY(CAT): S=SUBSAMPLE C=COMPOSITE  
BASIS(BAS): AR=AS RECEIVED AD=AIR DRY DR=DRY

PROSPECT 630 HOLE-NO 83-14 SEAM  
 CATEGORY R TYPE  
 TOP 65.39 METERS BASE 67.50 METERS  
 SCREEN SIZE .00 .00 WT % TTL .0  
 SPECIFIC GRAVITY .00 .00 WT % SINK .0 WT % FLOAT .0

BASIS

AD AR

|              |   |       |      |
|--------------|---|-------|------|
| MOISTURE     | % | .73   | .00  |
| ASH          | % | 9.19  | .00  |
| V.M.         | % | .00   | .00  |
| F.C.         | % | 90.08 | .00  |
| BTU/LB       |   | 0.    | 0.   |
| KJ/KG        |   | 0.    | 0.   |
| TOTAL S      | % | .64   | .00  |
| PYRITIC S    | % | .03   | .00  |
| SULFATE S    | % | .01   | .00  |
| MINERAL MATX |   | .00   | .00  |
| C            | % | 71.66 | .00  |
| H            | % | 3.85  | .00  |
| N            | % | .95   | .00  |
| CL           | % | .00   | .00  |
| O            | % | 12.98 | .00  |
| NA ACID SOL  |   | .000  | .000 |
| K ACID SOL   |   | .000  | .000 |
| NA WATER SOL |   | .000  | .000 |
| K WATER SOL  |   | .000  | .000 |

FREE SWELLING INDEX 1.0 SPEC. GRAV. .000 SURF. MOISTURE .00 EQUIL. MOISTURE 2.30

GIESLER PLASTICITY: SOFTENING FLUID SOLID MAX FLUIDITY  
 (F) (F) (F) DIAL-DIV/MIN  
 0. 0. 0. 0

HARDGROVE GRINDABILITY 67.0  
 HARDGROVE GRINDABILITY MOISTURE .0  
 ASH ANALYSIS:

FUSION TEMPS (F)

|                 |         |       |       |       |
|-----------------|---------|-------|-------|-------|
|                 | INITIAL | H=W   | H=W/2 | FLUID |
| REDUCING ATMOS  | 2104.   | 2224. | 2398. | 2483. |
| OXIDIZING ATMOS | 2418.   | 2513. | 2543. | 2618. |

WATER SOLUBLE ASH ALKALIES: NA .000 K .000

ASH CRITICAL VISCOCITY (POISES) TEMP(F) T250  
 0. 0. 0.

MINERAL ANALYSIS OF ASH

|       |       |      |       |      |       |
|-------|-------|------|-------|------|-------|
| SiO2  | AL2O3 | TiO2 | FE2O3 | CAO  |       |
| 59.76 | 17.51 | .61  | 12.30 | 2.41 |       |
| MGO   | NA2O  | K2O  | P2O5  | SO3  | UNDTR |
| .60   | .75   | .90  | 1.72  | 1.02 | -2.42 |

QUALITY FACTORS  
 BASE/ACID RATIO .00 DOLOMITE RATIO .00  
 SLAGGING INDEX .00 FE2O3/CAO RATIO .00  
 FOULING INDEX .00 SI/AL RATIO .00

16/04/84

PROSPECT 630

HOLE-NO 83-17

SEAM BRENDA

CATEGORY R

TYPE

TOP 107.37 METERS

BASE 113.46 METERS

SCREEN SIZE .00 .00

WT % TTL .0

SPECIFIC GRAVITY .00 .00

WT % SINK .0

WT % FLOAT .0

BASIS

AD AR

|              |   |       |      |
|--------------|---|-------|------|
| MOISTURE     | % | 1.01  | .00  |
| ASH          | % | 4.70  | .00  |
| V.M.         | % | .00   | .00  |
| F.C.         | % | 94.29 | .00  |
| BTU/LB       |   | 0.    | 0.   |
| KJ/KG        |   | 0.    | 0.   |
| TOTAL S      | % | .28   | .00  |
| PYRITIC S    | % | .01   | .00  |
| SULFATE S    | % | .00   | .00  |
| MINERAL MAT% |   | .00   | .00  |
| C            | % | 77.54 | .00  |
| H            | % | 4.35  | .00  |
| N            | % | 1.23  | .00  |
| CL           | % | .00   | .00  |
| O            | % | 10.89 | .00  |
| NA ACID SOL  |   | .000  | .000 |
| K ACID SOL   |   | .000  | .000 |
| NA WATER SOL |   | .000  | .000 |
| K WATER SOL  |   | .000  | .000 |

FREE SWELLING INDEX 1.5      SPEC. GRAV. .000      SURF. MOISTURE .00      EQUIL. MOISTURE 2.20

GIESLER PLASTICITY: SOFTENING (F) 0.      FLUID (F) 0.      SOLID (F) 0.      MAX FLUIDITY DIAL-DIV/MIN 0

HARDGROVE GRINDABILITY 79.0  
 HARDGROVE GRINDABILITY MOISTURE .0

ASH ANALYSIS:

FUSION TEMPS (F)

|                 |         |       |       |       |
|-----------------|---------|-------|-------|-------|
|                 | INITIAL | H=W   | H=W/2 | FLUID |
| REDUCING ATMOS  | 2443.   | 2468. | 2483. | 2650. |
| OXIDIZING ATMOS | 2473.   | 2483. | 2528. | 2650. |

WATER SOLUBLE ASH ALKALIES: NA .000      K .000

ASH CRITICAL VISCOCITY (POISES)

TEMP(F) 0.      T250 0.

MINERAL ANALYSIS OF ASH

|       |       |      |       |      |       |
|-------|-------|------|-------|------|-------|
| SiO2  | AL2O3 | TiO2 | FE2O3 | CAO  |       |
| 49.49 | 27.07 | 1.05 | 2.24  | 6.26 |       |
| MGO   | NA2O  | K2O  | P2O5  | SO3  | UNDTR |
| 1.74  | 2.37  | .48  | 2.16  | 4.85 | 2.29  |

QUALITY FACTORS

|                 |     |                 |     |
|-----------------|-----|-----------------|-----|
| BASE/ACID RATIO | .00 | DOLOMITE RATIO  | .00 |
| SLAGGING INDEX  | .00 | FE2O3/CAO RATIO | .00 |
| FOULING INDEX   | .00 | SI/AL RATIO     | .00 |



16/04/84

PROSPECT 630

HOLE-NO 83-18

SEAM BRENDA

CATEGORY R

TYPE

TOP 101.90 METERS

BASE 104.57 METERS

GREEN SIZE .00 .00

WT % TTL .0

SPECIFIC GRAVITY .00 .00

WT % SINK .0

WT % FLOAT .0

BASIS

AD

AR

|              |   | AD    | AR   |
|--------------|---|-------|------|
| MOISTURE     | % | .84   | .00  |
| ASH          | % | 6.97  | .00  |
| V.M.         | % | .00   | .00  |
| F.C.         | % | 92.19 | .00  |
| BTU/LB       |   | 0.    | 0.   |
| KJ/KG        |   | 0.    | 0.   |
| TOTAL S      | % | .37   | .00  |
| PYRITIC S    | % | .01   | .00  |
| SULFATE S    | % | .00   | .00  |
| MINERAL MAT% |   | .00   | .00  |
| C            | % | 76.11 | .00  |
| H            | % | 3.74  | .00  |
| N            | % | 1.22  | .00  |
| CL           | % | .00   | .00  |
| O            | % | 10.75 | .00  |
| NA ACID SOL  |   | .000  | .000 |
| K ACID SOL   |   | .000  | .000 |
| NA WATER SOL |   | .000  | .000 |
| K WATER SOL  |   | .000  | .000 |

FREE SWELLING INDEX 7.5      SPEC. GRAV. .000      SURF. MOISTURE .00      EQUIL. MOISTURE 1.80

GIESLER PLASTICITY: SOFTENING (F) 0.      FLUID (F) 0.      SOLID (F) 0.      MAX FLUIDITY DIAL-DIV/MIN 0

HARDGROVE GRINDABILITY 83.0  
HARDGROVE GRINDABILITY MOISTURE .0

ASH ANALYSIS:

FUSION TEMPS (F)

|                 | INITIAL | H=W   | H=W/2 | FLUID |
|-----------------|---------|-------|-------|-------|
| REDUCING ATMOS  | 2650.   | 2650. | 2650. | 2650. |
| OXIDIZING ATMOS | 2650.   | 2650. | 2650. | 2650. |

WATER SOLUBLE ASH ALKALIES: NA .000      K .000

ASH CRITICAL VISCOCITY (POISES) 0.

TEMP(F) 0.

T250 0.

MINERAL ANALYSIS OF ASH

| SiO2  | Al2O3 | TiO2 | Fe2O3 | CaO  | MgO | Na2O | K2O  | P2O5 | SO3 | UNDTR |
|-------|-------|------|-------|------|-----|------|------|------|-----|-------|
| 65.19 | 24.05 | 1.57 | 1.25  | 1.08 | .60 | 1.57 | 1.00 | 1.29 | .84 | 1.56  |

QUALITY FACTORS

|                 |     |                 |     |
|-----------------|-----|-----------------|-----|
| BASE/ACID RATIO | .00 | DOLOMITE RATIO  | .00 |
| SLAGGING INDEX  | .00 | FE2O3/CAO RATIO | .00 |
| FOULING INDEX   | .00 | SI/AL RATIO     | .00 |

02/04/84

PROSPECT 630 HOLE-NO 83-19 SEAM SHARON

CATEGORY R TYPE BASE 115.85 METERS

TOP 107.52 METERS SCREEN SIZE .00 .00 WT % TTL .0

SPECIFIC GRAVITY .00 .00 WT % SINK .0 WT % FLOAT .0

BASIS

|                | AD    | AR   |
|----------------|-------|------|
| MOISTURE %     | .69   | .00  |
| ASH %          | 7.02  | .00  |
| V.M. %         | .00   | .00  |
| F.C. %         | 92.29 | .00  |
| BTU/LB         | 0.    | 0.   |
| KJ/KG          | 0.    | 0.   |
| TOTAL S %      | .35   | .00  |
| PYRITIC S %    | .01   | .00  |
| SULFATE S %    | .01   | .00  |
| MINERAL MATX % | .00   | .00  |
| C %            | 74.49 | .00  |
| H %            | 4.52  | .00  |
| N %            | 1.07  | .00  |
| CL %           | .00   | .00  |
| O %            | 11.86 | .00  |
| NA ACID SOL    | .000  | .000 |
| K ACID SOL     | .000  | .000 |
| NA WATER SOL   | .000  | .000 |
| K WATER SOL    | .000  | .000 |

FREE SWELLING INDEX 4.0 SPEC. GRAV. .000 SURF. MOISTURE .00 EQUIL. MOISTURE 2.30

GIESLER PLASTICITY: SOFTENING (F) 0. FLUID (F) 0. SOLID (F) 0. MAX FLUIDITY DIAL-DIV/MIN 0

HARDGROVE GRINDABILITY 72.0  
HARDGROVE GRINDABILITY MOISTURE .0

ASH ANALYSIS:

|                 | FUSION TEMPS (F) |       |       |       |
|-----------------|------------------|-------|-------|-------|
|                 | INITIAL          | H=W   | H=W/2 | FLUID |
| REDUCING ATMOS  | 2014.            | 2024. | 2044. | 2124. |
| OXIDIZING ATMOS | 2328.            | 2358. | 2408. | 2598. |

WATER SOLUBLE ASH ALKALIES: NA .000 K .000

ASH CRITICAL VISCOCITY (POISES) 0. TEMP(F) 0. T250 0.

| MINERAL ANALYSIS OF ASH |       |      |       |      |       |
|-------------------------|-------|------|-------|------|-------|
| SiO2                    | Al2O3 | TiO2 | Fe2O3 | CaO  |       |
| 41.43                   | 11.56 | .83  | 32.97 | 4.38 |       |
| MgO                     | Na2O  | K2O  | P2O5  | SO3  | UNDTR |
| .33                     | .91   | .43  | 1.28  | 4.21 | -1.67 |

QUALITY FACTORS  
BASE/ACID RATIO .00 DOLOMITE RATIO .00  
SLAGGING INDEX .00 FE2O3/CAO RATIO .00  
FOULING INDEX .00 SI/AL RATIO .00

PROSPECT 630 HOLE-NO 83-21 SEAM BRENDA  
CATEGORY R TYPE

TOP 146.77 METERS BASE 152.74 METERS  
SCREEN SIZE .00 .00 WT % TTL .0  
SPECIFIC GRAVITY .00 .00 WT % SINK .0 WT % FLOAT .0

BASIS

|                | AD    | AR   |
|----------------|-------|------|
| MOISTURE %     | .81   | .00  |
| ASH %          | 6.73  | .00  |
| V.M. %         | .00   | .00  |
| F.C. %         | 92.46 | .00  |
| BTU/LB         | 0.    | 0.   |
| KJ/KG          | 0.    | 0.   |
| TOTAL S %      | .28   | .00  |
| PYRITIC S %    | .02   | .00  |
| SULFATE S %    | .00   | .00  |
| MINERAL MAT% % | .00   | .00  |
| C %            | 76.42 | .00  |
| H %            | 3.60  | .00  |
| N %            | 1.07  | .00  |
| CL %           | .00   | .00  |
| O %            | 11.09 | .00  |
| NA ACID SOL    | .000  | .000 |
| K ACID SOL     | .000  | .000 |
| NA WATER SOL   | .000  | .000 |
| K WATER SOL    | .000  | .000 |

FREE SWELLING INDEX 4.0 SPEC. GRAV. .000 SURF. MOISTURE .00 EQUIL. MOISTURE 2.10

GIESLER PLASTICITY: SOFTENING (F) 0. FLUID (F) 0. SOLID (F) 0. MAX FLUIDITY DIAL-DIV/MIN 0

HARDGROVE GRINDABILITY 77.0  
HARDGROVE GRINDABILITY MOISTURE .0

ASH ANALYSIS:

|                 | FUSION TEMPS (F) |       |       |       |
|-----------------|------------------|-------|-------|-------|
|                 | INITIAL          | H=W   | H=W/2 | FLUID |
| REDUCING ATMOS  | 2563.            | 2598. | 2650. | 2650. |
| OXIDIZING ATMOS | 2650.            | 2650. | 2650. | 2650. |

WATER SOLUBLE ASH ALKALIES: NA .000 K .000

ASH CRITICAL VISCOCITY (POISES) 0. TEMP(F) 0. T250 0.

| MINERAL ANALYSIS OF ASH |       |      |       |      |       |
|-------------------------|-------|------|-------|------|-------|
| SI02                    | AL2O3 | TIO2 | FE2O3 | CAO  |       |
| 51.47                   | 25.21 | 1.54 | 7.67  | 3.35 |       |
| MGO                     | NA2O  | K2O  | P2O5  | SO3  | UNDTR |
| 1.57                    | 1.81  | .83  | 1.30  | 3.36 | 1.89  |

QUALITY FACTORS  
BASE/ACID RATIO .00 DOLOMITE RATIO .00  
SLAGGING INDEX .00 FE2O3/CAO RATIO .00  
FOULING INDEX .00 SI/AL RATIO .00

PROSPECT 630 HOLE-NO 83-21 SEAM  
 CATEGORY R TYPE  
 TOP 60.32 METERS BASE 62.82 METERS  
 SCREEN SIZE .00 .00 WT % TTL .0  
 SPECIFIC GRAVITY .00 .00 WT % SINK .0 WT % FLOAT .0

BASIS

AD AR

|              |   |       |      |
|--------------|---|-------|------|
| MOISTURE     | x | .88   | .00  |
| ASH          | x | 4.05  | .00  |
| V.M.         | x | .00   | .00  |
| F.C.         | x | 95.07 | .00  |
| BTU/LB       |   | 0.    | 0.   |
| KJ/KG        |   | 0.    | 0.   |
| TOTAL S      | x | .41   | .00  |
| PYRITIC S    | x | .05   | .00  |
| SULFATE S    | x | .00   | .00  |
| MINERAL MAT  | x | .00   | .00  |
| C            | x | 77.85 | .00  |
| H            | x | 3.76  | .00  |
| N            | x | 1.04  | .00  |
| CL           | x | .00   | .00  |
| O            | x | 12.01 | .00  |
| NA ACID SOL  |   | .000  | .000 |
| K ACID SOL   |   | .000  | .000 |
| NA WATER SOL |   | .000  | .000 |
| K WATER SOL  |   | .000  | .000 |

FREE SWELLING INDEX 2.0 SPEC. GRAV. .000 SURF. MOISTURE .00 EQUIL. MOISTURE 1.80

GIESLER PLASTICITY: SOFTENING FLUID SOLID MAX FLUIDITY  
 (F) (F) (F) DIAL-DIV/MIN  
 0. 0. 0. 0

HARDGROVE GRINDABILITY 78.0  
 HARDGROVE GRINDABILITY MOISTURE .0

ASH ANALYSIS:

FUSION TEMPS (F)

|                 |         |       |       |       |
|-----------------|---------|-------|-------|-------|
|                 | INITIAL | H=W   | H=W/2 | FLUID |
| REDUCING ATMOS  | 2343.   | 2423. | 2493. | 2578. |
| OXIDIZING ATMOS | 2413.   | 2503. | 2583. | 2650. |

WATER SOLUBLE ASH ALKALIES: NA .000 K .000

ASH CRITICAL VISCOCITY (POISES) TEMP(F) T250  
 0. 0. 0.

MINERAL ANALYSIS OF ASH

|       |       |      |       |      |       |
|-------|-------|------|-------|------|-------|
| SiO2  | Al2O3 | TiO2 | Fe2O3 | CaO  |       |
| 46.77 | 24.13 | 1.46 | 13.57 | 2.25 |       |
| MgO   | Na2O  | K2O  | P2O5  | SO3  | UNDTR |
| .79   | 1.25  | .28  | 4.20  | 2.90 | 2.40  |

QUALITY FACTORS  
 BASE/ACID RATIO .00 DOLOMITE RATIO .00  
 SLAGGING INDEX .00 FE2O3/CAO RATIO .00  
 FOULING INDEX .00 SI/AL RATIO .00

FALLING CREEK

COAL QUALITY FROM 1983

RAW DATA AND MANIPULATION

~~CONFIDENTIAL~~

930-8

ORIGINAL COPY

525

MEMORANDUM

ESSO RESOURCES CANADA LIMITED  
RESEARCH DEPARTMENT  
82 06 22

Mr. J. HORGAN

Esso Minerals, Coal Division,  
Room 682, East Tower, Esso Plaza

Falling Creek Coal Licences

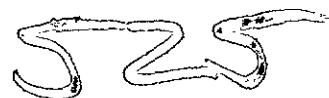
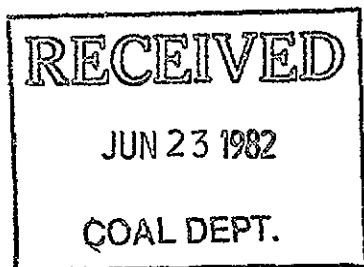
Enclosed are the XES elemental spectra for fourteen additional samples, plus a tabulation of the corrected and tabulated results. Note that the tabulation has been normalised so that each analysis totals a count of 10,000. This facilitates direct comparison of elemental abundance between spectra. Comparing the various spectra it may be noted that:

1. B059 seam A (upper) and B059 seam B bottom half are very similar, being characterised by high calcium ( $\text{CaO}$ ) content and moderately low sulfur (probably as  $\text{FeS}_2$ ). Silicon and aluminum are relatively high in both samples, being somewhat lower in the former sample.
2. 81-2 Spl. #21, Box 88, 81-1 seam #1, and 81-3, Spl. #43 are all characterised by scarcity or absence of calcium and a relatively large abundance of sulfur. Nickel is a relatively abundant trace element in these coals.
3. L102 Willow Cr. This sample stands apart from the other analyses in being very low in aluminum and silicon and high in both calcium and sulfur
4. 81-3 Sample #39. This sample is rich in silicon, compared with aluminum and carries a moderate, but not large quantity of calcium. Sulfur is moderately abundant.
5. All other samples carry a moderate percentage of silicon and aluminum plus an abundance of calcium. Sulfur is less abundant and only a relatively minor component of some samples in this group



Stanley A.J. Pocock

SAJP/sajp  
Attach.



Falling Cre. Coal Project.

| Sample                    | Na   | Mg    | Al     | Si   | P     | S    | Cl  | K    | Ca   | Ti  | Fe  | Ni   | Cu  |
|---------------------------|------|-------|--------|------|-------|------|-----|------|------|-----|-----|------|-----|
| H 120                     | 60.5 | 188.0 | 1889.4 | 2199 | 354.7 | 2254 | 673 | 48   | 549  | 64  | 110 | 1470 | 150 |
| B059 Seam A, Upper        | 1.5  | 73    | 1461   | 4229 | 88    | 768  | 146 | 1244 | 2756 | 55  | --- | 97   | 38  |
| 81-1 Seam #1              | 8    | 53    | 2639   | 5421 | ---   | 935  | 226 | 97   | 2    | 50  | 78  | 521  | 97  |
| B059 Seam B Bottom half   | ---  | 76    | 1838   | 4818 | ---   | 381  | 65  | 345  | 2205 | 7   | 98  | 166  | 9   |
| 81-3 Sample 43            | ---  | 22    | 2321   | 5006 | ---   | 1569 | 253 | 192  | 42   | 41  | 98  | 377  | 778 |
| 81-2 Spl. #21, Box 83     | ---  | ---   | 2350   | 3822 | ---   | 2251 | 520 | 128  | ---  | 79  | 93  | 586  | 1   |
| Spl. 10, Tr #1, Top Half. | ---  | 41    | 1613   | 4007 | ---   | 970  | 107 | 117  | 2796 | 18  | 82  | 224  | 96  |
| Spl. 10, Trench #1        | ---  | 36    | 1897   | 4449 | ---   | 850  | 194 | 229  | 1971 | 87  | 81  | 246  | 44  |
| Spl. 6, Trench #1         | 4    | 74    | 1951   | 5486 | ---   | 305  | 76  | 258  | 1454 | 64  | 253 | 71   | 4   |
| Sample L 75               | 115  | 56    | 2209   | 4653 | ---   | 292  | 140 | 255  | 1913 | 85  | 247 | 121  | 13  |
| D 175 Lady Diana Clsm.    | ---  | 57    | 1976   | 5119 | ---   | 221  | 70  | 336  | 1559 | 56  | 491 | 96   | 20  |
| L102 Willow Cr.           | 5    | 116   | 1311   | 2791 | ---   | 1628 | 309 | 80   | 2990 | 116 | 122 | 498  | 35  |
| H075 Base at seam         | ---  | 25    | 2055   | 5619 | ---   | 272  | 57  | 216  | 1473 | 22  | 117 | 120  | 27  |
| 81-3 Sample #39.          | 22   | 13    | 1927   | 5211 | ---   | 1340 | 180 | 176  | 649  | 19  | 175 | 230  | 58  |

S.J. Pocock June 1982

All results normalised to a total count of 10,000 for purposes of relative abundance determination.

DISK! STORE B059AU S0

B059 SEAM A UPPER Z=00

PR= 200KI 76SEC 200000 INT

V=2048 H=10KEU 1:1H AQ=10KEU 1H

IMP 07508 FALLING CREEK COAL

SI WITRINITE

00

AL

00 K

00 00

00 00 00 00

00

< 0.00KEU

YES

10 24KEU



DISK! STORE B059BB

B059 SEAM B BOTT 1/2

Z=00

PR= 200KI

175SEC

200000 INT

U=2048 H=10KEU 1:1H

AQ=10KEU 1H

IMP 47E08 FALLING CREEK COAL

S I U I T R I N I T E

A

C A

B K E A

A G

C U

F O O

N I

A G

< 0.00KEU

YES

10.24KEU

DISK STORE 813543 50

81-3 SAMPLE 43 Z=00

PR= 200KI 965EC 200000 IN

U=2048 H=10KEV I=1H AQ=10KEV 1H

IMP. 87508 FALLING CREEK COAL

SI VITRINITE

AL 161.80 - 165.80H

S

BL

MG

K

NI

< 0.00KEV

YES

10.24KEV >

DISK STORE 81151 50

81-1 SEAM #1 Z=00

PR= 200KT 1008SEC 200000 IN

V=2048 H=10KEV 1 1H AQ=10KEV 1H

TAP 47888 FALLING CREEK COAL

SI VITRINITE

AL 110.25 - 110.85W

E

NA

EL

NI

N

K

TI

FE

CU

NI

< 0 00KEV

XES

10 24KEV

DISK STORE 812321 50

81-2 SAMP #21 BOX 83 Z=00

PR= 200KI 90SEC 200000 INT

V=2048 H=10KEU 11H AQ=10KEU 1H

INP #7888 FALLING CREEK COAL

81 VITRINITE

888.42 - 259.1

AL 8

8L

K

T1 N1 8L

< 0.00KEU

XES

10.24KEU

DISK STORE L102 50

L102 WILLOW CR

E=00

PR= 200KI

965ED

200000 INT

V=2048

H=10KEV

I=1H

AQ=10KEV

1H

DMP #7888 FALLING CREEK COAL

VITRINITE

SI

CA

S

AL

CU

BA

MG

K

FE

NI

NAF

< 0.00KEV

YES

10 24KEV >

DISK STORE #13539.50

81-3 SAMPLE #39 Z=00

PR= 200KI BASED 200000 IN

V=2048 H=10KEU I=1H AQ=10KEU II

INP 7608 FALLING CREEK COAL-

VITRINITE

149.5 T 144.8

8

10 10 10 10 10

10 10 10 10 10 10 10 10 10 10

< 0.00KEU

XEST

10 24KEU

DISK STORE STATE 50

SAMPLE #10 TRENCH #1 Z=00

PR= 200KI 70SEC 200000 IN

V=2048 H=10KEV 1:1H AQ=10KEV 1H

IMP. 7508 FALLING CREEK COAL

SI VITRINITE

AL GA

8

OL CA

MG K FE NI

< 0.00KEV

YES

10 24KEV

DISK STORE 5101TA 500

SAMPLE #10 TRENCH #1 Z=00

PR= 200KI B 68SEC 200000 IN

U=2048 H=10KEU 1 TH AQ=10KEU 1H

IMP. #7600 FALLING CREEK COAL

SI VITRINITE

*Top trace*

A L D A

S K

EL CA

RG

NI

< 0 00KEU

RES

10 24KEU



DISKI STORE H075 50

H075 BASE AT SEAM

Z=00

PR= 200KI

70SEC

200000 IN

V=2048 H=10KEU 1:1H

AQ=10KEU 1H

IMP 7686 FALLING CREEK COAL

VITRINITE

SI CA 3.88 - 3.794

A

S K

NI

BL

CA

FE

NI

< 0.00KEU

XES

10.24KEU >

DISK STORE 2611 50  
SAMPLE #6 TRENCH #1 Z=00  
PR= 200KI 31SEC 200000 INT  
V=2048 H=10KEU I=1H AQ=10KEU 1H

IHP 17628 FALLING CREEK COAL

SI VITRINITE

CA

A

S K CA

MC ED TI FE H

< 0.00KEU XE 10 24KEU >

DISK STORE L75 50

SAMPLE #L75

Z=00

PR= 200KI " 85SEC 200000 INT

V=2048 H=10KEV I 1H AQ=10KEV 1H

DMP. 07808 FALLING CREEK COAL

SE VITRINITE

AL BA

S K BA

MC R CL TI PE NE

NAI

< 0 00KEV

YES

10 24KEV

DISK1 STORE 0175 5000

0175 LADY DIANA CLSM 2=00

PR= 200KI 90SEC 200000 INT

U=2048 H=10KEU I=1H AQ=10KEU IH

INP 7608 FALLING CREEK COAL

SIG UTRONITE

AL BA

8 K BA

NG P-EL TE BA NO

< 0 00KEU XES 10 24KEU >



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Resources Canada

Énergie, Mines et  
Ressources Canada

Science and Technology

Science et Technologie

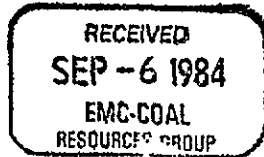
Institute of Sedimentary and Petroleum Geology  
Geological Survey of Canada  
3303-33rd St., N.W. Calgary, Alta.  
T2L 2A7

Institut de géologie sédimentaire et pétrolière  
Commission géologique du Canada  
3303, 33<sup>e</sup> rue N-O Calgary, Alberta  
T2L 2A7

4.9.84

Your file    Votre référence

Our file    Notre référence



Dear Louise,

please find enclosed a table with reflectance data on the coals you supplied. The reflectance data indicate medium volatile bituminous rank for all of them. In this class group 83-21 is significant higher in rank than the other two.

I received your correlation chart and the tables. Thanks! As I told you, work on coal will not for quite a while but will be started once again in Oct. 85. I hope to see you then.

Take care

*Loelz*

| BORENOLG | PELLET | DEPTH (m.)      | ESSO               | FALLING | CREEK |    | A.S.T.M rank              |
|----------|--------|-----------------|--------------------|---------|-------|----|---------------------------|
|          |        |                 | R <sub>o</sub> MAX | S       | N     |    |                           |
| 83-17    | 647/83 | 103.77 - 105.21 | This is 1.26       | * 1.33  | 0.06  | 50 | Medium soluble Sulfurides |
|          | 648/83 | 105.34 - 107.31 | the same 1.41      |         | 0.08  | 50 | "                         |
|          | 649/83 | 107.37 - 113.46 | same 1.32          |         | 0.06  | 50 | "                         |
| 83-18    | 650/83 | 95.81 - 96.00   | 1.31               | * 1.32  | 0.04  | 50 |                           |
|          | 651/83 | 96.72 - 97.63   | 1.37               |         | 0.05  | 50 |                           |
|          | 652/83 | 97.63 - 98.71   | 1.29               |         | 0.06  | 50 |                           |
|          | 653/83 | 98.71 - 100.19  | 1.28               |         | 0.05  | 50 |                           |
|          | 654/83 | 100.19 - 101.90 | 1.32               |         | 0.04  | 50 |                           |
|          | 655/83 | 101.90 - 104.36 | 1.36               |         | 0.05  | 50 |                           |
| 83-21    | 656/83 | 143.34 - 143.69 | 1.45               | * 1.44  | 0.06  | 50 |                           |
|          | 657/83 | 145.76 - 146.25 | 1.43               |         | 0.08  | 50 |                           |
|          | 658/83 | 146.25 - 146.77 | 1.42               |         | 0.05  | 50 |                           |
|          | 659/83 | 146.77 - 148.50 | 1.43               |         | 0.07  | 50 |                           |
|          | 660/83 | 148.50 - 148.68 | 1.38               |         | 0.06  | 50 |                           |
|          | 661/83 | 148.68 - 150.32 | 1.43               |         | 0.05  | 50 |                           |
|          | 662/83 | 150.32 - 150.85 | 1.49               |         | 0.06  | 50 |                           |
|          | 663/83 | 150.85 - 152.36 | 1.49               |         | 0.06  | 50 |                           |
|          | 664/83 | 152.36 - 152.74 | 1.46               |         | 0.06  | 50 |                           |

\* averaged

analyzed by J. Kalkreuth, ISPG

All readings consistently higher than Jim Allan

However both agree on rank prediction

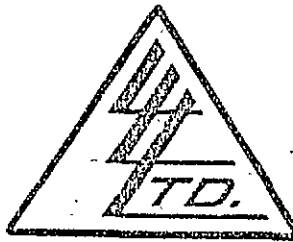
To: ESSO RESOURCES CANADA LIMITED

Research Department

237 - 4th Avenue S.W.,

Calgary, Alberta T2P 0H6

Attn: J. Horgan



File No. 25155-3

Date September 21, 1983

Samples Coal

P.O.# 02-5-100142

Fall Creek

Certificate of  
ASSAY OF

# LORING LABORATORIES LTD.

Page # 1

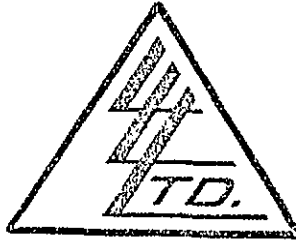
| SAMPLE No.             | F.S.I. |
|------------------------|--------|
| <u>"Coal Analysis"</u> |        |
| <u>"Air Dried"</u>     |        |
| <u>Hole 83-17</u>      |        |
| Seam 11 Ply 1          | 5½     |
| Ply 11                 | 1      |
| Ply 111                | 2      |
| <u>Hole 83-18</u>      |        |
| Ply VII1               | 2½     |
| Ply X                  | 6½     |
| Ply XI                 | 7½     |
| Ply XII                | 0      |
| Ply XIV                | 8      |
| <u>Hole 83-21</u>      |        |
| Seam 1 Ply 1           | 1      |
| Ply 11                 | 1      |
| Ply IV                 | 2      |
| Ply V                  | 2      |
| Ply VI                 | 2½     |
| Ply VII                | 1      |

I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE  
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
Pulps Retained one month  
unless specific arrangements  
made in advance.

Assayer

To: ESSO RESOURCES CANADA LIMITED  
Research Department  
237 - 4th Avenue S.W.,  
Calgary, Alberta T2P 0H6  
Attn: J. Horgan



File No. 25155-3  
Date September 21, 1983  
Samples Coal  
P.O.# 02-5-100142  
Fall Creek

*Certificate of*  
**ASSAY OF**  
**LORING LABORATORIES LTD.**

Page # 2

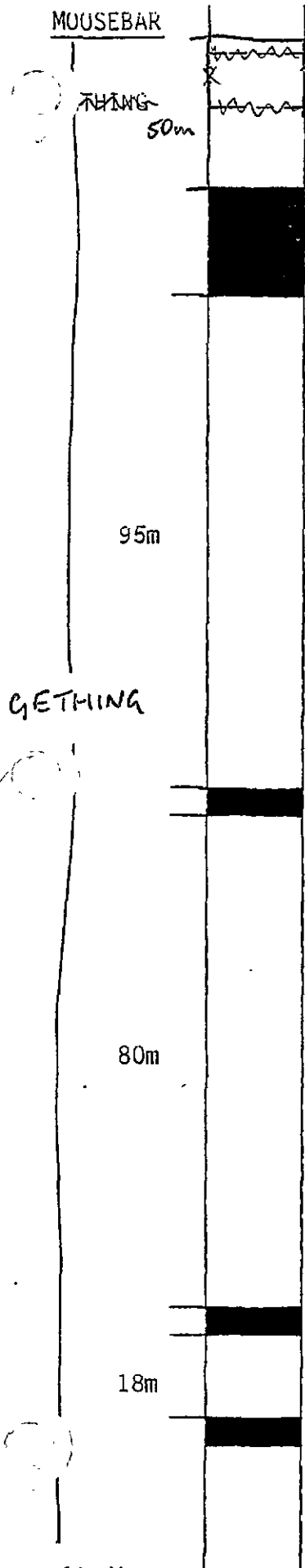
| SAMPLE No.                                                                           | F.S.I              |
|--------------------------------------------------------------------------------------|--------------------|
| <p><u>"Coal Analysis"</u></p> <p><u>Hole 83-21</u></p> <p>Ply VI11</p> <p>Ply IX</p> | <p>5½</p> <p>8</p> |

**I Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE  
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
Pulps Retained one month  
unless specific arrangements  
made in advance.

Assayer





| COAL INTERVAL | SEAM                  | MOIST | ASH  | VOL.  | F.C. | S    | DRY BTU/LB. |
|---------------|-----------------------|-------|------|-------|------|------|-------------|
| 6.53<br>10.47 | Brenda Seam Composite | 2.79  | 35.0 | 17.87 | 47.0 | 0.22 | 9,469       |
| 3.54<br>4.02  | Twin Seam             | 0.6   | 9.7  | 21.3  | 68.4 | 0.4  | 13,694      |
| 2.63<br>3.94  | Dave Seam             | 0.4   | 13.2 | 16.2  | 70.2 | 0.27 | 13,252      |
| 2.01<br>3.12  | Rat Seam              | 3.3   | 18.0 | 22.7  | 56.0 | 0.64 | 10,197      |

BRENDA SEAM

|            | ADM                                              | MOIST | VOL  | ASH | F/C  | S    | B&U    | FSI |
|------------|--------------------------------------------------|-------|------|-----|------|------|--------|-----|
| DH 81-2    | 1.9                                              | 0.6   | 22.6 | 7.0 | 69.8 | 0.27 | 14,117 | 2   |
| DH 82-2    | Samples B37, 38, 39 & 40 Chip samples not tested |       |      |     |      |      |        |     |
| DH 82-11P2 | Samples B58, 59, 60, 61, 62 All tested           |       |      |     |      |      |        |     |

| DH 82-11P2<br>SAMPLE | BENCH<br>THICKNESS | S.G.    | H <sub>2</sub> O | VOL         | ASH         | KG          | F/C          | WT%         | BTU/lb<br>DRY |
|----------------------|--------------------|---------|------------------|-------------|-------------|-------------|--------------|-------------|---------------|
| B58                  | 1.2                | x 1.625 | 4.42             | 21.09       | 30.74       | 1.95        | 48.19        | 16.4        | 10,499        |
| B59                  | 1.6                | x 1.675 | 4.01             | 19.11       | 36.81       | 2.68        | 44.07        | 22.55       | 9,061         |
| B60                  | 1.2                | x 2.075 | 4.03             | 11.62       | 70.61       | 2.49        | 17.77        | 20.96       | 3,298         |
| B61                  | 0.84               | x 1.72  | 0.93             | 16.20       | 39.01       | 1.44        | 44.78        | 12.1        | 8,653         |
| B62                  | <u>2.46</u>        | x 1.35  | 4.18             | 19.97       | 5.95        | <u>3.32</u> | 74.08        | <u>27.9</u> | 14,477        |
|                      | 7.60               |         |                  |             |             | 11.88       |              | 99.91       |               |
| B58                  |                    |         | 0.72             | 3.45        | 5.04        |             | 7.90         |             | 1,722         |
| B59                  |                    |         | 0.9              | 4.31        | 8.30        |             | 9.94         |             | 2,043         |
| B60                  |                    |         | 0.84             | 2.43        | 14.80       |             | 3.72         |             | 691           |
| B61                  |                    |         | 0.11             | 1.96        | 4.72        |             | 5.42         |             | 1,047         |
| B62                  |                    |         | <u>1.16</u>      | <u>5.57</u> | <u>1.66</u> |             | <u>20.67</u> |             | <u>4,039</u>  |
| TOTAL                |                    |         | 3.73             | 17.72       | 34.52       |             | 47.65        |             | 9,542         |

DH 82-11CH

| SAMPLE | LENGTH      | S.G.  | WT          | WT%          | H <sub>2</sub> O | VOL         | ASH         | F/C          | BTU/lb<br>DRY |
|--------|-------------|-------|-------------|--------------|------------------|-------------|-------------|--------------|---------------|
| CORE 1 | 1.33        | 1.527 | 2.03        | 20.06        | 2.28             | 19.80       | 22.02       | 58.17        | 11,420        |
| CORE 2 | 1.42        | 1.95  | 2.77        | 27.37        | 1.55             | 15.43       | 60.08       | 24.49        | 5,119         |
| CORE 3 | 1.26        | 1.875 | 2.36        | 23.32        | 1.62             | 14.37       | 53.17       | 32.45        | 6,214         |
| CORE 4 | <u>2.16</u> | 1.37  | <u>2.96</u> | <u>29.25</u> | 2.01             | 22.19       | 7.65        | 70.15        | 14,054        |
|        | 6.17        |       | 10.12       | 100%         |                  |             |             |              |               |
| CORE 1 |             |       |             |              | 0.457            | 3.97        | 4.42        | 11.67        | 2,291         |
| CORE 2 |             |       |             |              | 0.424            | 4.22        | 16.44       | 6.70         | 1,401         |
| CORE 3 |             |       |             |              | 0.378            | 3.35        | 12.40       | 7.57         | 1,449         |
| CORE 4 |             |       |             |              | <u>0.588</u>     | <u>6.49</u> | <u>2.24</u> | <u>20.52</u> | <u>4,111</u>  |
| TOTAL  |             |       |             |              | 1.847            | 18.03       | 35.5        | 46.46        | 9,252         |

| O/C    | ADM  | S    | FSI | MOIST | VOL  | ASH  | F/C  | BTU    |
|--------|------|------|-----|-------|------|------|------|--------|
| L075   | 26.5 | 0.20 | -   | 3.5   | 27.9 | 14.1 | 54.5 | 10,154 |
| B048   | 11.1 | 0.16 | -   | 9.5   | 21.4 | 23.3 | 45.8 | 8,530  |
| B049 T | 6.9  | 0.22 | -   | 3.4   | 18.5 | 41.0 | 37.1 | 7,137  |
| M      | 6.8  | 0.31 | -   | 2.4   | 22.7 | 13.9 | 61.0 | 11,686 |
| B      | 9.3  | 0.24 | -   | 3.0   | 23.1 | 8.5  | 65.4 | 12,019 |
| COMP   |      | 0.26 | -   | 3.2   | 20.1 | 25.2 | 51.5 | 9,686  |

TWIN SEAM

|                   | DH 81-2      | FSI       | S   | ADM | MOIST | VOL  | ASH | F/C  | DRY<br>BTU/lb |
|-------------------|--------------|-----------|-----|-----|-------|------|-----|------|---------------|
|                   | SAMPLES 9-13 | 2½        | 0.4 | 1.7 | 0.6   | 21.3 | 9.7 | 68.4 | 13,694        |
| <i>Space &gt;</i> | DH 82-2      | NO SAMPLE |     |     |       |      |     |      |               |

DAVE SEAM

| SAMPLE #  | REC | MmR <sub>0</sub> | FSI  | S    | ADM | MOIST | VOL   | ASH   | F/C   | DRY<br>BTU/lb |
|-----------|-----|------------------|------|------|-----|-------|-------|-------|-------|---------------|
| DH81-2    |     |                  |      |      |     |       |       |       |       |               |
| 18 (COAL) | 40% | -                | -    | 0.27 | 1.7 | 0.4   | 16.2  | 13.2  | 70.2  | 13,252        |
| DH81-3    |     |                  |      |      |     |       |       |       |       |               |
| 35, 38    | 50% | 1.3A             | N.A. | 0.23 | 1.4 | 0.7   | 14.0  | 54.7  | 30.6  | -             |
| DH82-1    |     |                  |      |      |     |       |       |       |       |               |
|           |     | +28m             |      |      |     |       |       |       |       |               |
| B45       |     | 52.1             |      |      |     | 0.73  | 11.74 | 52.15 | 36.11 | 6,939         |
|           |     | 47.9             |      |      |     | 0.85  | 14.40 | 38.67 | 46.93 | 9,229         |
|           |     | COMPOSITE        |      |      |     | 0.78  | 13.01 | 46.08 | 41.29 | 8,036         |
| B46       |     | 44.5             |      |      |     | 1.33  | 12.80 | 48.62 | 38.58 | 7,414         |
|           |     | 55.5             |      |      |     | 1.55  | 17.32 | 24.61 | 58.07 | 11,414        |
|           |     | COMPOSITE        |      |      |     | 1.45  | 15.31 | 35.29 | 49.40 | 9,634         |
| DH82-4    |     |                  |      |      |     |       |       |       |       |               |
| B28       |     | 45.5             |      |      |     | 0.62  | 10.33 | 62.80 | 26.87 | 4,694         |
|           |     | 54.5             |      |      |     | 0.55  | 13.11 | 47.84 | 39.05 | 7,663         |
| B31       |     | 46.4             |      |      |     | 2.35  | 13.40 | 65.97 | 20.63 | 3,631         |
|           |     | 53.6             |      |      |     | 5.21  | 15.34 | 46.52 | 38.14 | 7,588         |

RAT SEAM

| SAMPLE #                        | REC | MmR <sub>o</sub> | FSI | S    | ADM  | MOIST | VOL  | ASH  | F/C  | DRY<br>BTU/lb |
|---------------------------------|-----|------------------|-----|------|------|-------|------|------|------|---------------|
| DH81-2<br>19, 23, 24, 25        | 56% | 1.45             | 1   | 0.51 | 1.8  | 0.6   | 14.3 | 37.0 | 48.1 | 9,284         |
| DH81-3<br>44, 45<br>Surface O/C | 67% | -                | -   | 0.42 | 1.5  | 0.7   | 12.1 | 62.2 | 25.0 | -             |
| B062T                           | -   | 1.04             | -   | 0.40 | 20.0 | 15.5  | 21.3 | 27.0 | 36.2 | 6,813         |
| B                               | -   | 0.96             | -   | 0.29 | 24.1 | 9.2   | 18.9 | 41.9 | 30.0 | 5,458         |
| B059T                           | -   | 1.32             | -   | 0.59 | 23.0 | 8.5   | 24.1 | 15.7 | 51.7 | 9,439         |
| B                               | -   | 1.36             | -   | 0.50 | 24.9 | 8.6   | 23.6 | 19.8 | 48.3 | 8,759         |
| TRENCH #1                       |     |                  |     |      |      |       |      |      |      |               |
| Sample 9                        | -   | 0.95             | -   | 0.39 | 18.9 | 9.2   | 22.0 | 27.5 | 41.3 | 7,484         |
| Sample 10                       | -   | 1.16             | -   | 0.64 | 17.3 | 3.3   | 22.7 | 18.0 | 56.0 | 10,197        |

GETHING FORMATION . . . BRENDA SEAM

| D.H.  | Ply  | % MACERALS mmf |      |     |      |     |              | Dry Ash Free Prox. |         |       |               |                              | Predicted VM |
|-------|------|----------------|------|-----|------|-----|--------------|--------------------|---------|-------|---------------|------------------------------|--------------|
|       |      | V              | SF   | F   | OI   | L   | Total Inerts | FSI                | ASH     | VM    | C.V. (Btu/lb) | MmRo                         |              |
| 83-18 | X    | 62.3           | 23.6 | 2.8 | 11.2 | --  | 37.6         | 6½                 | (16.13) | 23.09 | 15,631        | 1.18                         | 30%          |
|       | XI   | 86.5           | 5.8  | 2.3 | 5.4  | --  | 13.5         | 7½                 | (30.50) | 28.66 | 15,463?       |                              |              |
|       | XIV  | 76.7           | 14.1 | 1.6 | 7.6  | --  | 23.3         | 8                  | ( 8.62) | 24.40 | 15,716        |                              |              |
| 83-21 | IV   | 50.8           | 28.8 | 4.4 | 15.6 | 0.4 | 48.8         | 2                  | (15.54) | 21.78 | 15,485        | 1.27                         | 27%          |
|       | V    | 65.4           | 23.3 | 5.7 | 5.6  | --  | 36.6         | 2                  | (18.94) | 35.27 | 14,022        | Calcite                      |              |
|       | VI   | 57.0           | 30.3 | 4.3 | 8.4  | --  | 43.0         | 2½                 | ( 5.87) | 20.48 | 15,548        |                              |              |
|       | VII  | 43.6           | 38.1 | 2.3 | 16.0 | --  | 56.4         | 1                  | (27.30) | 24.00 | 14,776        | CaCO <sub>3</sub> ? High Ash |              |
|       | VIII | 80.8           | 11.7 | 2.4 | 5.1  | --  | 19.2         | 5½                 | ( 5.75) | 21.98 | 15,614        |                              |              |
|       | IX   | 96.6           | 1.0  | 0.8 | 1.6  | --  | 3.4          | 8                  | (10.31) | 26.94 | 15,145        |                              |              |
| 83-17 | I    | 64.7           | 22.1 | 3.0 | 10.1 | --  | 35.2         | 5½                 | ( 3.84) | 22.67 | 15,664        | 1.24                         | 28%          |
|       | II   | 33.7           | 46.4 | 3.8 | 15.8 | 0.2 | 66.0         | 1                  | (12.83) | 23.80 | 15,096        |                              |              |
|       | III  | 45.2           | 40.2 | 4.9 | 9.7  | --  | 54.8         | 2                  | ( 5.09) | 21.34 | 15,517        |                              |              |

GETHING FORMATION . BRENDA SEAM

| <u>D.H.</u> | <u>Ply</u> | % MACERALS mmf |           |          |           |          |                     | Dry Ash Free Prox. |            |           |                      |                     | <u>Predicted VM</u> |
|-------------|------------|----------------|-----------|----------|-----------|----------|---------------------|--------------------|------------|-----------|----------------------|---------------------|---------------------|
|             |            | <u>V</u>       | <u>SF</u> | <u>F</u> | <u>OI</u> | <u>L</u> | <u>Total Inerts</u> | <u>FSI</u>         | <u>ASH</u> | <u>VM</u> | <u>C.V. (Btu/lb)</u> | <u>MmRo</u>         |                     |
| 83-18       | X          | 62.3           | 23.6      | 2.8      | 11.2      | --       | 37.6                | 6½                 | (16.13)    | 23.09     | 15,631               | 1.18                | 30%                 |
|             | XI         | 86.5           | 5.8       | 2.3      | 5.4       | --       | 13.5                | 7½                 | (30.50)    | 28.66     | 15,463?              |                     |                     |
|             | XIV        | 76.7           | 14.1      | 1.6      | 7.6       | --       | 23.3                | 8                  | ( 8.62)    | 24.40     | 15,716               |                     |                     |
| 83-21       | IV         | 50.8           | 28.8      | 4.4      | 15.6      | 0.4      | 48.8                | 2                  | (15.54)    | 21.78     | 15,485               | 1.27                | 27%                 |
|             | V          | 65.4           | 23.3      | 5.7      | 5.6       | --       | 36.6                | 2                  | (18.94)    | 35.27     | 14,022               | Calcite             |                     |
|             | VI         | 57.0           | 30.3      | 4.3      | 8.4       | --       | 43.0                | 2½                 | ( 5.87)    | 20.48     | 15,548               |                     |                     |
|             | VII        | 43.6           | 38.1      | 2.3      | 16.0      | --       | 56.4                | 1                  | (27.30)    | 24.00     | 14,776               | CaCO <sub>3</sub> ? | High Ash            |
|             | VIII       | 80.8           | 11.7      | 2.4      | 5.1       | --       | 19.2                | 5½                 | ( 5.75)    | 21.98     | 15,614               |                     |                     |
|             | IX         | 96.6           | 1.0       | 0.8      | 1.6       | --       | 3.4                 | 8                  | (10.31)    | 26.94     | 15,145               |                     |                     |
| 83-17       | I          | 64.7           | 22.1      | 3.0      | 10.1      | --       | 35.2                | 5½                 | ( 3.84)    | 22.67     | 15,664               | 1.24                | 28%                 |
|             | II         | 33.7           | 46.4      | 3.8      | 15.8      | 0.2      | 66.0                | 1                  | (12.83)    | 23.80     | 15,096               |                     |                     |
|             | III        | 45.2           | 40.2      | 4.9      | 9.7       | --       | 54.8                | 2                  | ( 5.09)    | 21.34     | 15,517               |                     |                     |



FALLING CREEK COAL QUALITY BY SEAM

JANUARY 31, 1984

Brenda Seam

DH 83-21

Mineable Interval 146.77 to 152.74 = 5.97 m (dip 21°) 5.57 m True

| Basis  | Moist | Ash   | Vol.  | F.C.  | S     | BTU/lb<br>C.V. | S.G. | FSI |
|--------|-------|-------|-------|-------|-------|----------------|------|-----|
| a.d.   | 0.89  | 11.38 | 19.64 | 68.06 | 0.264 | 13,517.6       | 1.36 | 4   |
| dry    |       | 11.48 | 19.82 | 68.67 | 0.266 | 13,638         |      |     |
| d.a.f. |       |       | 22.39 | 77.58 | 0.300 | 15,407         |      |     |

Twin Seam

DH 81-2

|        |     |      |       |       |      |        |    |     |
|--------|-----|------|-------|-------|------|--------|----|-----|
| a.d.   | 0.6 | 9.7  | 21.3  | 68.40 | 0.4  | 13,694 | -- | 2.5 |
| dry    |     | 9.76 | 21.43 | 68.81 | 0.4  | 13,777 |    |     |
| d.a.f. |     |      | 23.75 | 76.25 | 0.44 | 15,267 |    |     |

Dave Seam

DH 81-2

|        |     |       |       |       |      |        |    |    |
|--------|-----|-------|-------|-------|------|--------|----|----|
| a.d.   | 0.4 | 13.20 | 16.20 | 70.20 | 0.27 | 13,252 | -- | -- |
| dry    |     | 13.25 | 16.26 | 70.48 | 0.27 | 13,305 |    |    |
| d.a.f. |     |       | 18.74 | 81.24 | 0.31 | 15,337 | -- | -- |

Rat Seam

Trench #1, Sample 10

|        |     |       |       |       |      | Surface<br>Sample | Predicted C.V. |    |
|--------|-----|-------|-------|-------|------|-------------------|----------------|----|
| a.d.   | 3.3 | 18.0  | 22.70 | 56.0  | 0.64 | 10,197            | --             | -- |
| dry    |     | 18.61 | 23.47 | 57.91 | 0.66 | 10,545            | 12,240         |    |
| d.a.f. |     |       | 28.84 | 71.15 | 0.81 | 12,956            | 15,039         |    |

FALLING CREEK COAL QUALITY BY SEAM

JANUARY 31, 1984

Brenda Seam

DH 83-21

Mineable Interval 146.77 to 152.74 = 5.97 m (dip 21<sup>0</sup>) 5.57 m True

| Basis  | Moist | Ash   | Vol.  | F.C.  | S     | BTU/lb<br>C.V. | S.G. | FSI |
|--------|-------|-------|-------|-------|-------|----------------|------|-----|
| a.d.   | 0.89  | 11.38 | 19.64 | 68.06 | 0.264 | 13,517.6       | 1.36 | 4   |
| dry    |       | 11.48 | 19.82 | 68.67 | 0.266 | 13,638         |      |     |
| d.a.f. |       |       | 22.39 | 77.58 | 0.300 | 15,407         |      |     |

Twin Seam

DH 81-2

|        |     |      |       |       |      |        |    |     |
|--------|-----|------|-------|-------|------|--------|----|-----|
| a.d.   | 0.6 | 9.7  | 21.3  | 68.40 | 0.4  | 13,694 | -- | 2.5 |
| dry    |     | 9.76 | 21.43 | 68.81 | 0.4  | 13,777 |    |     |
| d.a.f. |     |      | 23.75 | 76.25 | 0.44 | 15,267 |    |     |

Dave Seam

DH 81-2

|        |     |       |       |       |      |        |    |    |
|--------|-----|-------|-------|-------|------|--------|----|----|
| a.d.   | 0.4 | 13.20 | 16.20 | 70.20 | 0.27 | 13,252 | -- | -- |
| dry    |     | 13.25 | 16.26 | 70.48 | 0.27 | 13,305 |    |    |
| d.a.f. |     |       | 18.74 | 81.24 | 0.31 | 15,337 | -- | -- |

Rat Seam

Trench #1, Sample 10

|        |     |       |       |       |      | Surface<br>Sample | Predicted |    |
|--------|-----|-------|-------|-------|------|-------------------|-----------|----|
| a.d.   | 3.3 | 18.0  | 22.70 | 56.0  | 0.64 | 10,197            | --        | -- |
| dry    |     | 18.61 | 23.47 | 57.91 | 0.66 | 10,545            | 12,240    |    |
| d.a.f. |     |       | 28.84 | 71.15 | 0.81 | 12,956            | 15,039    |    |

FALLING CREEK COAL QUALITY BY SEAM

JANUARY 31, 1984

Brenda Seam

DH 83-21

Mineable Interval 146.77 to 152.74 = 5.97 m (dip 21°) 5.57 m True

| Basis  | Moist | Ash   | Vol.  | F.C.  | S     | BTU/lb<br>C.V. | S.G. | FSI |
|--------|-------|-------|-------|-------|-------|----------------|------|-----|
| a.d.   | 0.89  | 11.38 | 19.64 | 68.06 | 0.264 | 13,517.6       | 1.36 | 4   |
| dry    |       | 11.48 | 19.82 | 68.67 | 0.266 | 13,638         |      |     |
| d.a.f. |       |       | 22.39 | 77.58 | 0.300 | 15,407         |      |     |

Twin Seam

DH 81-2

|        |     |      |       |       |      |        |    |     |
|--------|-----|------|-------|-------|------|--------|----|-----|
| a.d.   | 0.6 | 9.7  | 21.3  | 68.40 | 0.4  | 13,694 | -- | 2.5 |
| dry    |     | 9.76 | 21.43 | 68.81 | 0.4  | 13,777 |    |     |
| d.a.f. |     |      | 23.75 | 76.25 | 0.44 | 15,267 |    |     |

Dave Seam

DH 81-2

|        |     |       |       |       |      |        |    |    |
|--------|-----|-------|-------|-------|------|--------|----|----|
| a.d.   | 0.4 | 13.20 | 16.20 | 70.20 | 0.27 | 13,252 | -- | -- |
| dry    |     | 13.25 | 16.26 | 70.48 | 0.27 | 13,305 |    |    |
| d.a.f. |     |       | 18.74 | 81.24 | 0.31 | 15,337 | -- | -- |

Rat Seam

Trench #1, Sample 10

|        |     |       |       |       |      | Surface<br>Sample | Predicted |    |
|--------|-----|-------|-------|-------|------|-------------------|-----------|----|
| a.d.   | 3.3 | 18.0  | 22.70 | 56.0  | 0.64 | 10,197            | --        | -- |
| dry    |     | 18.61 | 23.47 | 57.91 | 0.66 | 10,545            | 12,240    |    |
| d.a.f. |     |       | 28.84 | 71.15 | 0.81 | 12,956            | 15,039    |    |

Hole 21

Specimen 2

Composite 60.32 - 62.82 = 2.50 apparent

|       | thickness | S.G. | 10° dip = 2.46 true | Kg          | Wt%          | FC    |
|-------|-----------|------|---------------------|-------------|--------------|-------|
| ply 1 | 1.93 x    | 1.30 |                     | 2.51        | 75.15        | 76.23 |
| ply 2 | .23 x     | 1.63 |                     | .37         | 11.07        | 42.63 |
| ply 3 | .34 x     | 1.37 |                     | 1.46        | 13.77        | 67.96 |
|       |           |      |                     | <u>3.34</u> | <u>99.99</u> |       |

CONTRIBUTION

| Ply   | H <sub>2</sub> O | Ash  | Vol   | F.C.  | S.  | Btu/lb.  |
|-------|------------------|------|-------|-------|-----|----------|
| ply 1 | .69              | 2.40 | 14.77 | 57.28 | .30 | 11186.8  |
| ply 2 | .08              | 2.84 | 3.42  | 4.72  | .02 | 1104.78  |
| ply 3 | .12              | 1.59 | 2.69  | 9.36  | .04 | 1862.25  |
| total | .89              | 7.72 | 20.88 | 71.36 | .36 | 14153.83 |

$$\text{Part Mineral Matter} = (1.08 \times 7.72) + (.55 \times .36) = 8.5$$

$$\text{Vol dmmf} = \frac{20.88 \times 100}{100 - 8.5} = 23$$

$$Q_{\text{dmmf}} = \frac{14153.83 \times 100}{100 - (.89 + 8.5)} = 15620.6$$

$$Q_{\text{mmmf}} = \frac{15620.6 \times (100 - 1.8)}{100} = 15339.43$$

D.H. 83-17

Brenda Seam

TRUE THICK 9.21 m

COMPOSITE 103.77m TO 113.46m (9.69m)

| SAMPLE  | THICKNESS | S.G   | kg    | Wt % |
|---------|-----------|-------|-------|------|
| PLY I   | 1.44 x    | 1.30  | 1.87  | 14.5 |
| —       | 0.13 x    | 1.60? | 0.21  | 1.6  |
| PLY II  | 1.97 x    | 1.38  | 2.72  | 21.1 |
| —       | 0.06 x    | 1.60? | 0.10  | 0.8  |
| PLY III | 6.09 x    | 1.31  | 7.98  | 61.9 |
|         |           |       | 12.88 | 99.9 |

| CONTRIBUTION | H <sub>2</sub> O | ASH  | VOL   | F.C   | S    | BTU/lb   |
|--------------|------------------|------|-------|-------|------|----------|
| PLY I        | 0.1              | 0.55 | 3.14  | 10.69 | 0.06 | 2,166.7  |
| —            | 0.0              | 0.58 | 0.21  | 0.80  | 0.0  | 153.8    |
| PLY II       | 0.16             | 2.69 | 4.35  | 13.91 | 0.05 | 2,756.1  |
| —            | 0.0              | 0.29 | 0.11  | 0.40  | 0.0  | 76.9     |
| PLY III      | 0.49             | 3.12 | 12.44 | 45.84 | 0.17 | 9,044.2  |
| TOTAL        | 0.75             | 7.23 | 20.25 | 71.64 | 0.28 | 14,197.7 |

(3.5:1)

Vols d.a.f. 22.0%

$$\text{Vols Mineral Matter} = (1.08 \times 7.23) + (.55 \times 2.28) = 7.96$$

$$\text{Vols dmmf} = \frac{20.25 \times 100}{100 - 7.96} = 22.0$$

$$Q \text{ dmmf} = \frac{14,197.7 \times 100}{100 - (.75 + 7.96)} = 15552.3$$

$$Q_{\text{mmmf}} = \frac{15552.3 \times (100 - 1.8)}{100} = 15272.36$$

D.H. 83-14 Dave Seam? THICKNESS 1.88m TRUE

COMPOSITE A 65.39 To 67.58 (2.22m)

| SAMPLE  | THICKNESS     | S.G  | Kg   | wt%  | S.G. |
|---------|---------------|------|------|------|------|
| PLY II  | 0.41 x 1.57 = | 0.64 | 20.4 | 0.32 |      |
| —       | 0.10 x 1.46 = | 0.15 | 4.8  | 0.07 |      |
| PLY III | 1.46 x 1.35 = | 1.97 | 62.9 | 0.85 |      |
| —       | 0.22 x 1.66 = | 0.37 | 11.8 | 0.19 |      |
|         |               | 3.13 | 99.9 | 1.43 |      |

| CONTRIBUTION | H <sub>2</sub> O | ASH  | VOL  | F.C  | S    | BTU/lb                                |
|--------------|------------------|------|------|------|------|---------------------------------------|
| PLY II       | 0.20             | 6.7  | 2.5  | 11.0 | 0.1  | 2,040.4                               |
| —            | 0.04             | 1.1  | 11.0 | 2.6  | 0.02 | 561.2 (DH 83-17 SEAM I PLY I)         |
| PLY III      | 0.34             | 3.8  | 9.9  | 48.8 | 0.38 | 9,089.0                               |
| —            | 0.13             | 5.2  | 1.9  | 4.5  | 0.04 | 949.9 (DH 83-18 PLY VIII) AV (PLY XV) |
| TOTAL        | 0.71             | 16.8 | 15.3 | 66.9 | 0.54 | 12,640.5                              |

Parr Mineral Matter =  $1.08 \times 16.8 + 0.55 \times 0.54 = 18.44$

~~BTU dry = 12,730.4~~

$Q_{dmmf} = \frac{12640.5 \times 100}{100 - (0.71 + 18.44)} = 156345$

$Q_{mmmf} = \frac{156345 \times (100 - 1.8)}{100} = 153530$

$Vols\ dmmf = \frac{15.3 \times 100}{100 - 18.44} = 18.76$  Low vol bit.

(daf = 18.55) daf = 15,323.6 Btu/lb

# FALLING CREEK PROJECT

RAT SEAM D.H. 83-14

MATHEMATICAL COMPOSITE Interval 139.39 - 143.41 = 4.02 = 3.29

| PLY  | Thickness   | S.G  | WT          | WT%          | Dry S.G |
|------|-------------|------|-------------|--------------|---------|
| VII  | 0.94        | 1.61 | 0.27        | 4.83         |         |
| VIII | 0.28        | 2.15 | 0.60        | 10.73        |         |
| IX   | 1.94        | 1.57 | 3.05        | 54.56        |         |
| X    | 0.34        | 2.32 | 0.79        | 14.13        |         |
| XI   | <u>0.52</u> | 1.69 | <u>0.88</u> | <u>15.74</u> |         |
|      | 4.02        |      | 5.59        | 99.99        |         |

## Contribution

|        | Moist | ASH   | VOL   | FC    | S           | C.V          | S.G  |
|--------|-------|-------|-------|-------|-------------|--------------|------|
| VII    | 0.02  | 1.74  | 0.65  | 2.42  | 0.02        | 464          | 0.08 |
| VIII   | 0.10  | 8.25  | 0.90  | 1.47  | 0.02        | 265          | 0.23 |
| IX     | 0.30  | 18.06 | 7.87  | 28.33 | 0.33        | 5456         | 0.86 |
| X      | 0.13  | 11.94 | 0.89  | 1.17  | 0.05        | 215          | 0.33 |
| XI     | 0.11  | 7.19  | 1.95  | 6.48  | 0.08        | 1257         | 0.27 |
| a.d    | 0.66  | 47.18 | 12.26 | 39.87 | 0.50        | 7657         | 1.77 |
| dry    |       | 47.49 | 12.34 | 40.13 | 0.50        | 7708         |      |
| d.a.f. |       |       | 23.50 | 76.42 | <u>0.95</u> | <u>14679</u> |      |

Fuel Ratio 3.25:1

# RESERVE AREA (1)

V.H's 75-3

SEAMS: DAVE? Interval 252 ft - 264.5 ft from Logs = 12.5 ft = 3.81m  
254.5 - 267.3 from Core description = 12.6 ft

Recovery through main part of seam 70%

Dipping @ 9° Gives 3.76 TRUE THICKNESS

Mining Interval = 3.76m

## ANALYSIS:

| HEAD RAW $\frac{1}{4}$ " X 0 | R.M. | ASH  | VOL  | F.C. | F.S.I.        |
|------------------------------|------|------|------|------|---------------|
|                              | 0.8  | 28.5 | 14.0 | 56.7 | $\frac{1}{2}$ |

D.a.f. = 19.8% Vols Ratio 4.05 : 1

27.7 MT @ Av 10.9 bcm/tonne



RESERVE AREA (2) D.H. 83-21

Brenda Seam Interval <sup>Mineable</sup> 146.77 - 152.74 = 5.97m <sup>Interval</sup>  
 Seam dipping at 21° 5.57m True

COMPOSITE

| PLY  | length      | S.G. | Wt          | Wt. %       |
|------|-------------|------|-------------|-------------|
| IV   | 1.73        | 1.37 | 2.37        | 29.29       |
| V    | 0.18        | 1.51 | 0.27        | 3.34        |
| VI   | 1.64        | 1.32 | 2.16        | 26.70       |
| VII  | 0.53        | 1.50 | 0.79        | 9.76        |
| VIII | 1.51        | 1.31 | 1.98        | 24.47       |
| IX   | <u>0.38</u> | 1.36 | <u>0.52</u> | <u>6.43</u> |
|      | 5.97        |      | 8.09        | 99.99       |

| CONTRIBUTION | MOIST       | ASH          | VOL          | FC           | S            | C.V.            | S.G.        |
|--------------|-------------|--------------|--------------|--------------|--------------|-----------------|-------------|
| IV           | 0.25        | 4.51         | 5.34         | 19.18        | 0.079        | 3,797.4         | 0.40        |
| V            | 0.02        | 0.63         | 0.95         | 1.74         | 0.007        | 377.0           | 0.05        |
| VI           | 0.26        | 1.55         | 5.10         | 19.79        | 0.067        | 3,869.6         | 0.35        |
| VII          | 0.09        | 2.64         | 1.69         | 5.34         | 0.018        | 1,038.8         | 0.15        |
| VIII         | 0.22        | 1.39         | 5.02         | 17.83        | 0.073        | 3,568.2         | 0.32        |
| IX           | 0.05        | 0.66         | 1.54         | 4.18         | 0.020        | 866.6           | 0.09        |
|              | <u>0.89</u> | <u>11.38</u> | <u>19.64</u> | <u>68.06</u> | <u>0.264</u> | <u>13,517.6</u> | <u>1.36</u> |

Vols d.a.f. 22.39% Ratio 3.46:1 D.a.f. 15,408 Btu/lb

PLY VIII 21.98% 3.55:1 15,614  
 PLY VI 20.48% 3.88:1 15,547

5.4ME @ Av 5.6 bcm/tonne

RESERVE AREA (3) D.H 83-14

DAVE SEAM? Interval  $65.39 - 67.58 = 2.22m$  (1.88m True)

| RAW COMPOSITE | H <sub>2</sub> O | ASH  | VOL  | F.C  | S    | BTU/lb   | S.G  |
|---------------|------------------|------|------|------|------|----------|------|
|               | 0.71             | 16.8 | 15.3 | 66.9 | 0.54 | 12,640.5 | 1.43 |

|     |   |   |      |      |  |          |  |
|-----|---|---|------|------|--|----------|--|
| Daf | - | - | 18.5 | 81.1 |  | 15,323.7 |  |
|-----|---|---|------|------|--|----------|--|

Ratio 4.37 : 1

Mining Interval 1.88m

Seam dipping @ 32°

S.G. 1.43

4.83 Mt at AV 26 bcm/tonne

4.68 Mt Planimeter.

RESERVE AREA (4) D.H. 83-19

Seams 7, 8 & 9 Interval 107.52 - 118.50 = 10.98 (5.01 True)

Minibg Thickness 3.79 @ 1.6 S.G. (only seam 7 & 8 used)  
4.18 at 1.56 S.G. with parting.

Vols 20-21 Ratio 3.6:1

Comp to follow

8.6 Mt

| RAW COMPOSITE | H <sub>2</sub> O | Ash   | Vol   | F.C.  | S  | Btu/lb  | S.G. |
|---------------|------------------|-------|-------|-------|----|---------|------|
|               | .95              | 30.23 | 18.26 | 50.18 | 26 | 10418   | 1.56 |
| IAF           |                  |       | 26    | 72    |    | 15098.5 |      |

RESERVE AREA (5) D.H. 83-18

BRENDA SEAM Interval 95.81 - 104.36 = 8.71m

Not enough data

(2.2m thick true

| ? | H <sub>2</sub> O | Ash  | Vol   | F.C.  | S.  | C.U.  | PSI | SG   |
|---|------------------|------|-------|-------|-----|-------|-----|------|
|   | .85              | 8.55 | 27.11 | 68.49 | .35 | 14239 | 8   | 1.32 |

2.46m apparent 101.90 - 104.52 No Disp.

FALLING CREEK

SERVE AREA

(8)

D.H.s

75-4 &

75-6

(Pan Ocean)

D.H. 75-4

Interval

Lithology

Log

98 - 110 feet = 3.66m

TRUE

3.55m

Interval

Density  
Geophysical

Log

95 - 108 feet = 3.96m

3.84m

Dip 14°

Mineable thickness taken as 3.84m

D.H. 75-6

Interval

Lithology

Log

465 - 486 ft = 6.4m

TRUE

5.4m

Interval

Density

Log

461 - 483 ft = 6.7m

5.68m

Dip 32°

Mineable thickness taken as 5.68m

AV.

"

"

From

75-4 &

75-6 =

4.76m

QUALITY

D.H. 75-4

1/4 x 0

Raw

R.M

ASH

VOL

F.C.

F.S.I.

Fuel  
Ratio

Recovery 45%

2.1

7.3

18.6

72.0

1 1/2

3.8

D.a.f.

20.5

D.H. 75-6

1/4

x 0

Raw

Recovery 25%

1.7

5.6

19.6

73.1

1 1/2

3.7

D.a.f.

21.1

TOTAL TONNAGE

4,948,186 tonnes

@ 10.9 Bcm/t

FALLING CREEK

RESERVE AREA (9)

D.H. 83-17

Interval  $103.77 - 113.46 = 9.69\text{m}$

True  
9.21m

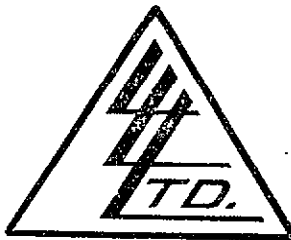
Mineable thickness 9.21m

QUALITY

| RAW    | R.M  | ASH  | VOL   | FC.   | S    | C.V.   | F.S.I | Fuel<br>Ratio | S.G. |
|--------|------|------|-------|-------|------|--------|-------|---------------|------|
|        | 0.75 | 7.23 | 20.25 | 71.64 | 0.28 | 14,198 | 2     | 3.5           |      |
| D.a.f. |      |      | 22.0  |       |      | 15,429 |       |               |      |

TOTAL TONNAGE 4,862,649 tonnes @ 3 BCM/E

To: ESSO RESOURCES CANADA LIMITED  
 Research Department  
 237 - 4th Avenue S.W.,  
 Calgary, Alberta T2P 0H6  
 Attn: J. Horgan



File No. 25155-3  
 Date September 21, 1983  
 Samples Coal  
 P.O.# 02-5-100142  
 Fall Creek

Certificate of  
**ASSAY** of  
**LORING LABORATORIES LTD.**

Page # 1

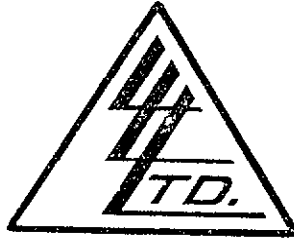
| SAMPLE No.             | F.S.I |
|------------------------|-------|
| <u>"Coal Analysis"</u> |       |
| <u>"Air Dried"</u>     |       |
| <u>Hole 83-17</u>      |       |
| Seam 11 Ply 1          | 5½    |
| Ply 11                 | 1     |
| Ply 111                | 2     |
| <u>Hole 83-18</u>      |       |
| Ply V111               | 2½    |
| Ply X                  | 6½    |
| Ply X1                 | 7½    |
| Ply X11                | 0     |
| Ply XIV                | 8     |
| <u>Hole 83-21</u>      |       |
| Seam 1 Ply 1           | 1     |
| Ply 11                 | 1     |
| Ply 1V                 | 2     |
| Ply V                  | 2     |
| Ply V1                 | 2½    |
| Ply V11                | 1     |

**I Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE  
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
 Pulp Retained one month  
 unless specific arrangements  
 made in advance.

Assayer

To: ESSO RESOURCES CANADA LIMITED  
Research Department  
237 - 4th Avenue S.W.,  
Calgary, Alberta T2P 0H6  
Attn: J. Horgan



File No. 25155-3  
Date September 21, 1983  
Samples Coal  
P.O.# 02-5-100142  
Fall Creek

*Certificate of*  
**ASSAY of**  
**LORING LABORATORIES LTD.**

Page # 2

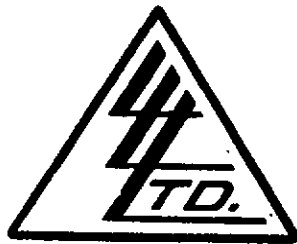
| SAMPLE No.                                                                           | F.S.I                                                                                                                                              |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>"Coal Analysis"</u></p> <p><u>Hole 83-21</u></p> <p>Ply VII1</p> <p>Ply 1X</p> | <p>5½</p> <p>8</p> <p><b>I Hereby Certify</b> THAT THE ABOVE RESULTS ARE THOSE<br/>ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .</p> |

Rejects Retained one month.  
Pulps Retained one month  
unless specific arrangements  
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Assayer



To: ESSO RESOURCES CANADA LIMITED  
237 - 4th Avenue S.W.  
Calgary, Alberta T2P 0H6  
Attn: J. Horgan



File No. 25404-2  
 Date November 15, 1983  
 Samples RECONSTITUTE PRODUCT

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**LORING LABORATORIES LTD.**

Page # 1

*Dead Divisions  
Per minute*

*Maximum  
Fluidity*

*Solidification*

GEISELER PLASTICITY TESTS

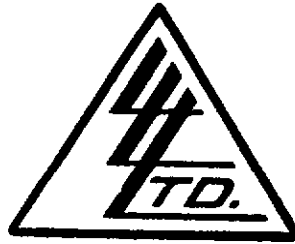
| SAMPLE No.                 | START                |           | MAXIMUM |           | FINAL |           | RANGE |
|----------------------------|----------------------|-----------|---------|-----------|-------|-----------|-------|
|                            | DDPM                 | TEMP (°C) | DDPM    | TEMP (°C) | DPPM  | TEMP (°C) |       |
| <u>MAN COAL COMPOSITES</u> |                      |           |         |           |       |           |       |
| Hole 17, seam 2            | -----NO READING----- |           |         |           |       |           |       |
| Hole 18                    | 1                    | 438       | 88      | 477       | 0     | 510       | 72    |
| Hole 21, seam 1            | 1                    | 470       | 1.1     | 480       | 0     | 501       | 31    |
| Hole 21 seam 2             | -----NO READING----- |           |         |           |       |           |       |

**I** **Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE  
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
 Pulp Retained one month  
 unless specific arrangements  
 made in advance.

Assayer

To: ESSO RESOURCES CANADA LIMITED  
 237 - 4th Avenue S.W.,  
 Calgary, Alberta T2P 0H6  
 Attn: J. Horgan



File No. ....25404-2.....  
 Date ..November 15., 1983.....  
 Samples RECONSTITUTE PRODUCT..

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Page # 2

DILATATION TESTS

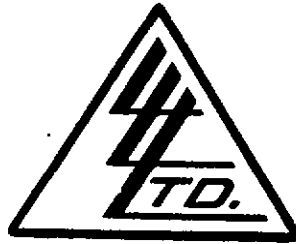
| SAMPLE No.                   | S.T. (°C) | MDT (°C) | Maximum <i>Contraction</i><br>M.C. % |           | G.NO. |
|------------------------------|-----------|----------|--------------------------------------|-----------|-------|
|                              |           |          | Max <i>Dilatation</i><br>M.D. %      |           |       |
| <b>CLEAN COAL COMPOSITES</b> |           |          |                                      |           |       |
| Hole 17, seam 2              | 428       | -        | 10% @479°                            | -         | -     |
| Hole 18                      | 395       | 476      | 28                                   | <u>13</u> | 0.967 |
| Hole 21, seam 1              | 425       | -        | 18% @494°                            | -         | -     |
| Hole 21, seam 2              | 431       | -        | 10% @488°                            | -         | -     |

**I Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE  
 ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
 Pulp Retained one month  
 unless specific arrangements  
 made in advance.

Assayer

To: ESSO RESOURCES CANADA LIMITED  
237 - 4th Avenue S.W.,  
Calgary, Alberta T2P 0H6  
Attn: J. Horgan



File No. 25525-1  
Date November 15, 1983  
Samples Reconstitute Product

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**ASSAY of**  
**LORING LABORATORIES LTD.**

Page # 2

GEISELER PLASTICITY TESTS

| SAMPLE No.            | DDPM                 | START    | DDPM | MAXIMUM  | DDPM | FINAL    | RANGE |
|-----------------------|----------------------|----------|------|----------|------|----------|-------|
|                       |                      | TEMP(°C) |      | TEMP(°C) |      | TEMP(°C) |       |
| CLEAN COAL COMPOSITES |                      |          |      |          |      |          |       |
| Hole 83-14            | -----NO READING----- |          |      |          |      |          |       |
| Hole 83-19            | 1                    | 462      | 1.2  | 473      | 0    | 503      | 41    |

**I** **Hereby Certify** THAT THE ABOVE RESULTS ARE THOSE  
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .

Rejects Retained one month.  
Pulps Retained one month  
unless specific arrangements  
made in advance.

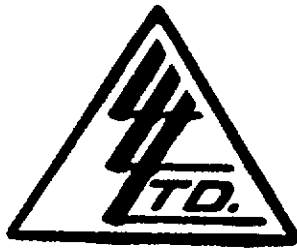
Assayer

To: ESSO RESOURCES CANADA LIMITED

237 - 4th Avenue S.W.,

Calgary, Alberta T2P 0H6

Attn: J. Horgan



File No. 25525-1

Date November 15, 1983

Samples Reconstitute Product

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ASSAY of**

**LORING LABORATORIES LTD.**

Page # 1

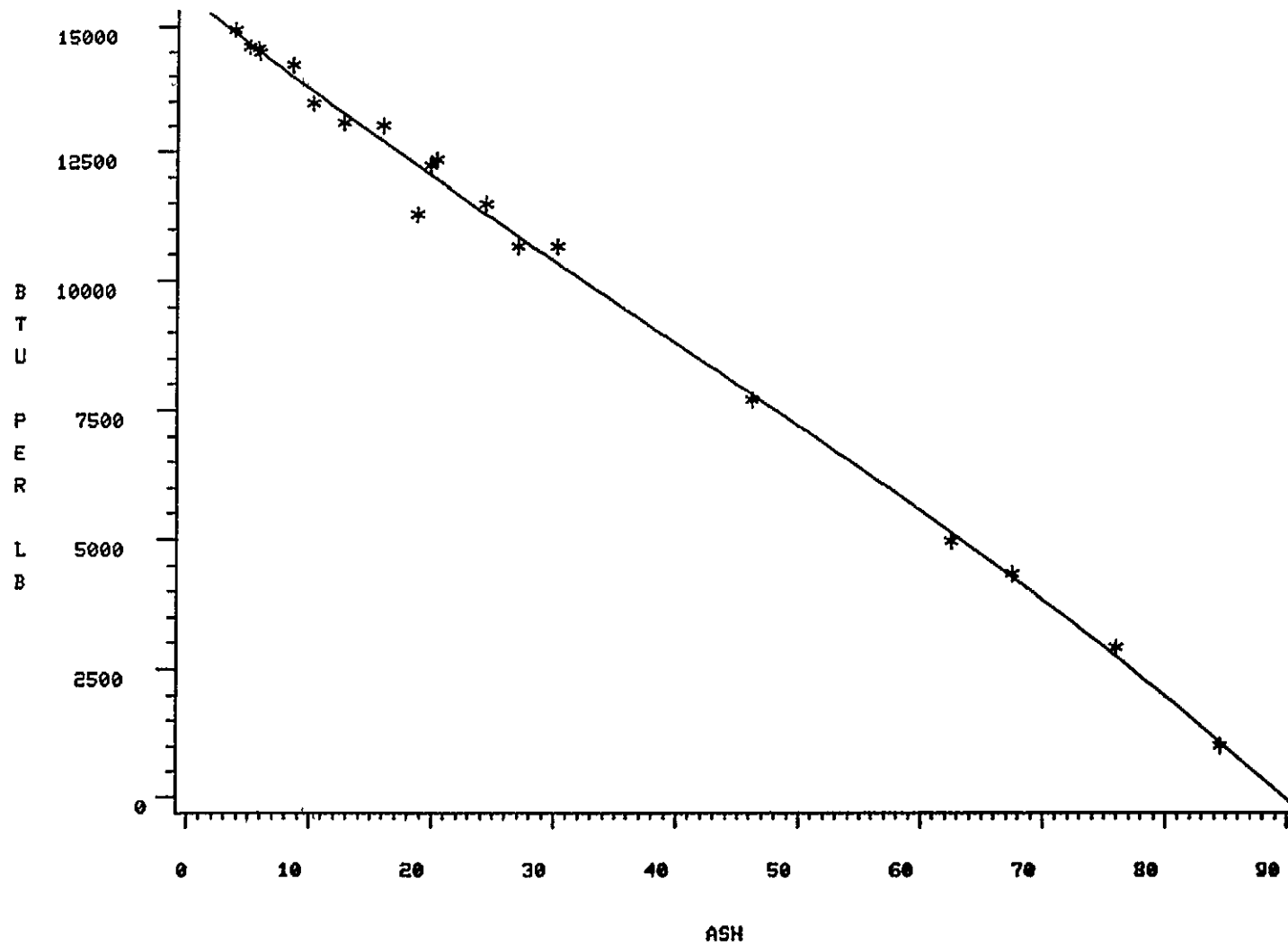
| SAMPLE No.           | DILATATION TESTS     |          |           |        |   | G.No. |
|----------------------|----------------------|----------|-----------|--------|---|-------|
|                      | S.T. (°C)            | MDI (°C) | M.C. %    | M.D. % |   |       |
| LEAN COAL COMPOSITES |                      |          |           |        |   |       |
| Hole 83-14           | -----NO READING----- |          |           |        |   |       |
| Hole 83-19           | 425                  | -        | 24% @503° | -      | - |       |

**I Hereby Certify THAT THE ABOVE RESULTS ARE THOSE  
ASSAYS MADE BY ME UPON THE HEREIN DESCRIBED SAMPLES . . . .**

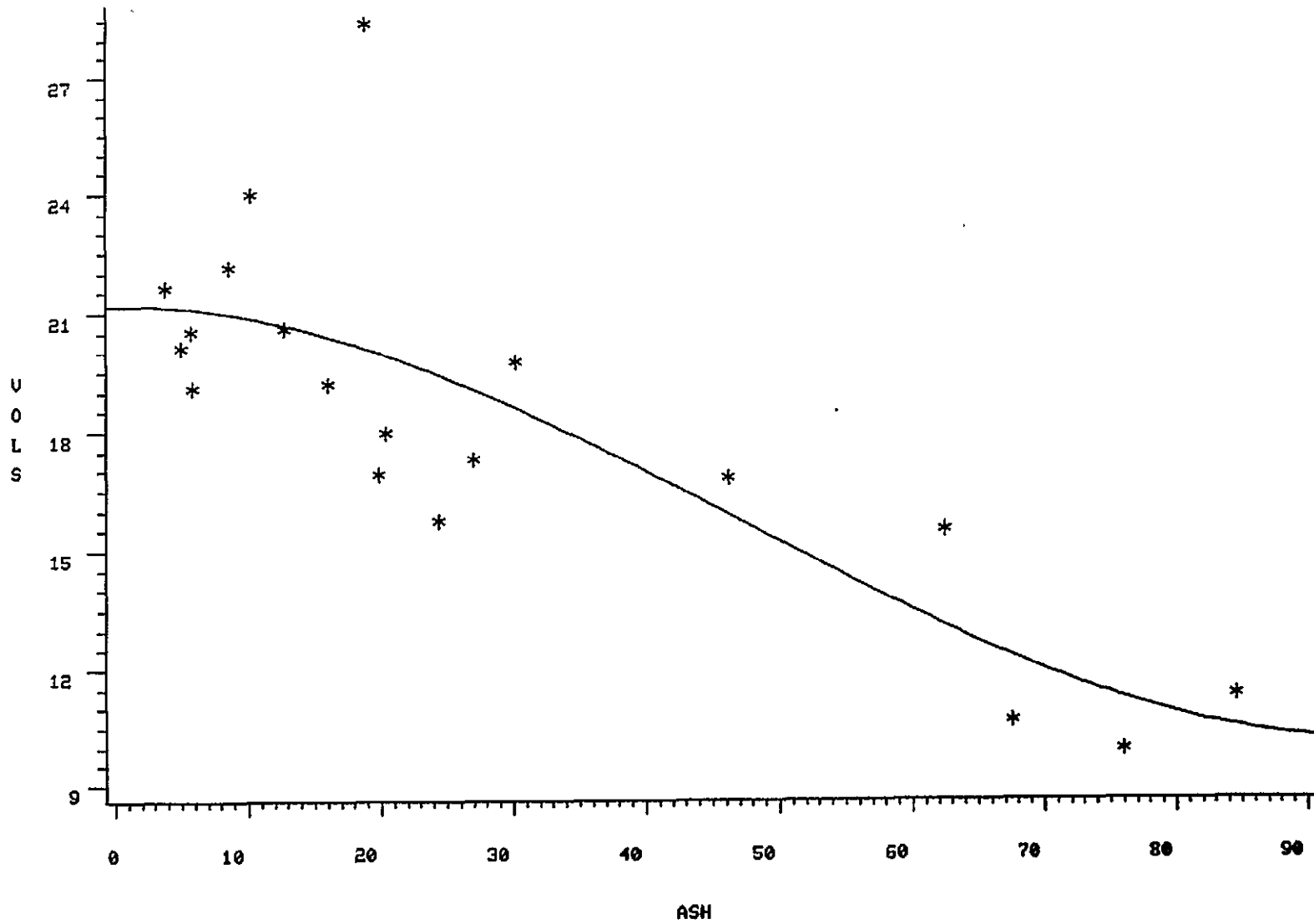
Rejects Retained one month.  
Pulps Retained one month  
unless specific arrangements  
made in advance.

Assayer

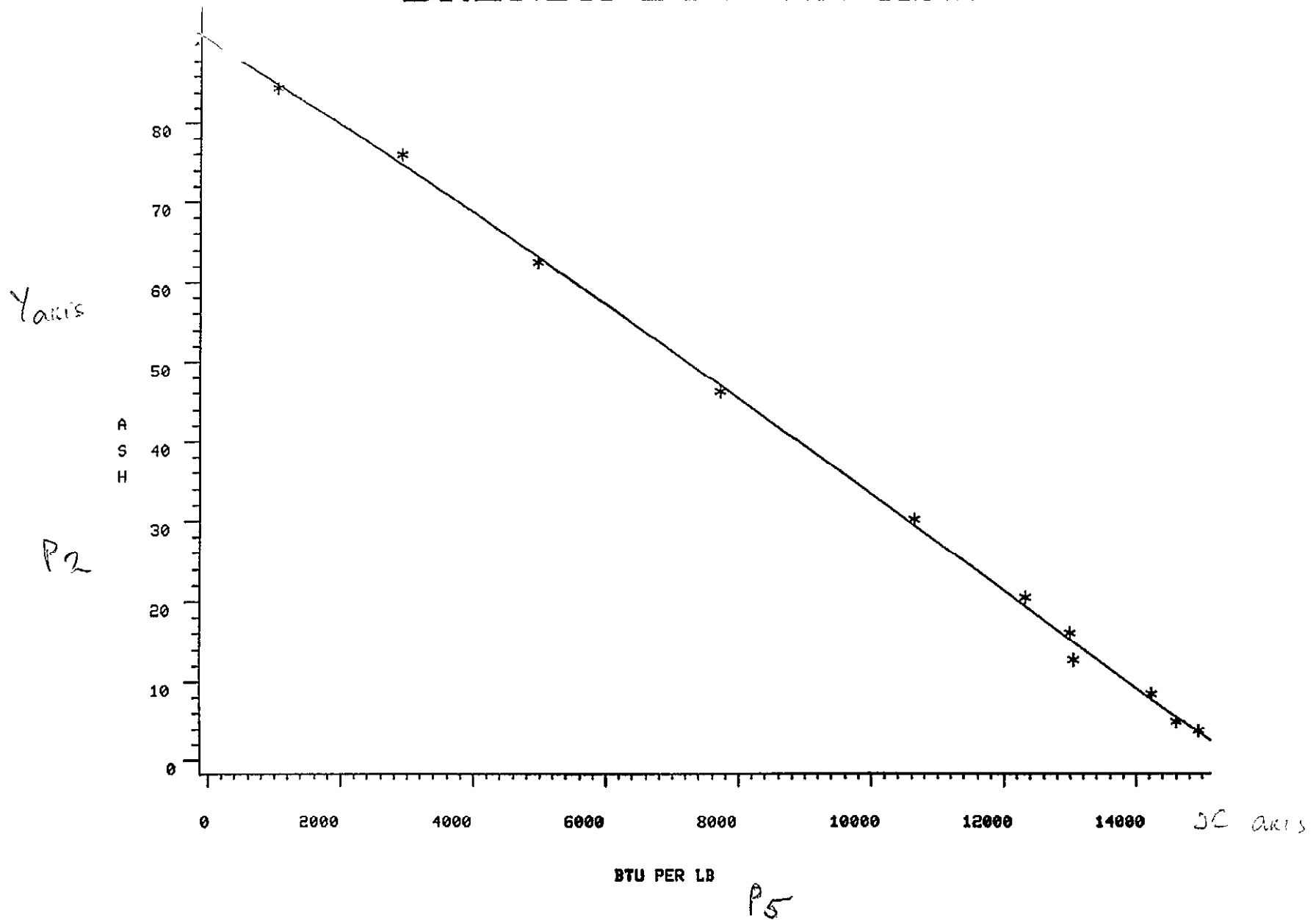
# BRENDA SEAM ASH VS. BTU



# BRENDA SEAM ASH VS. V.M



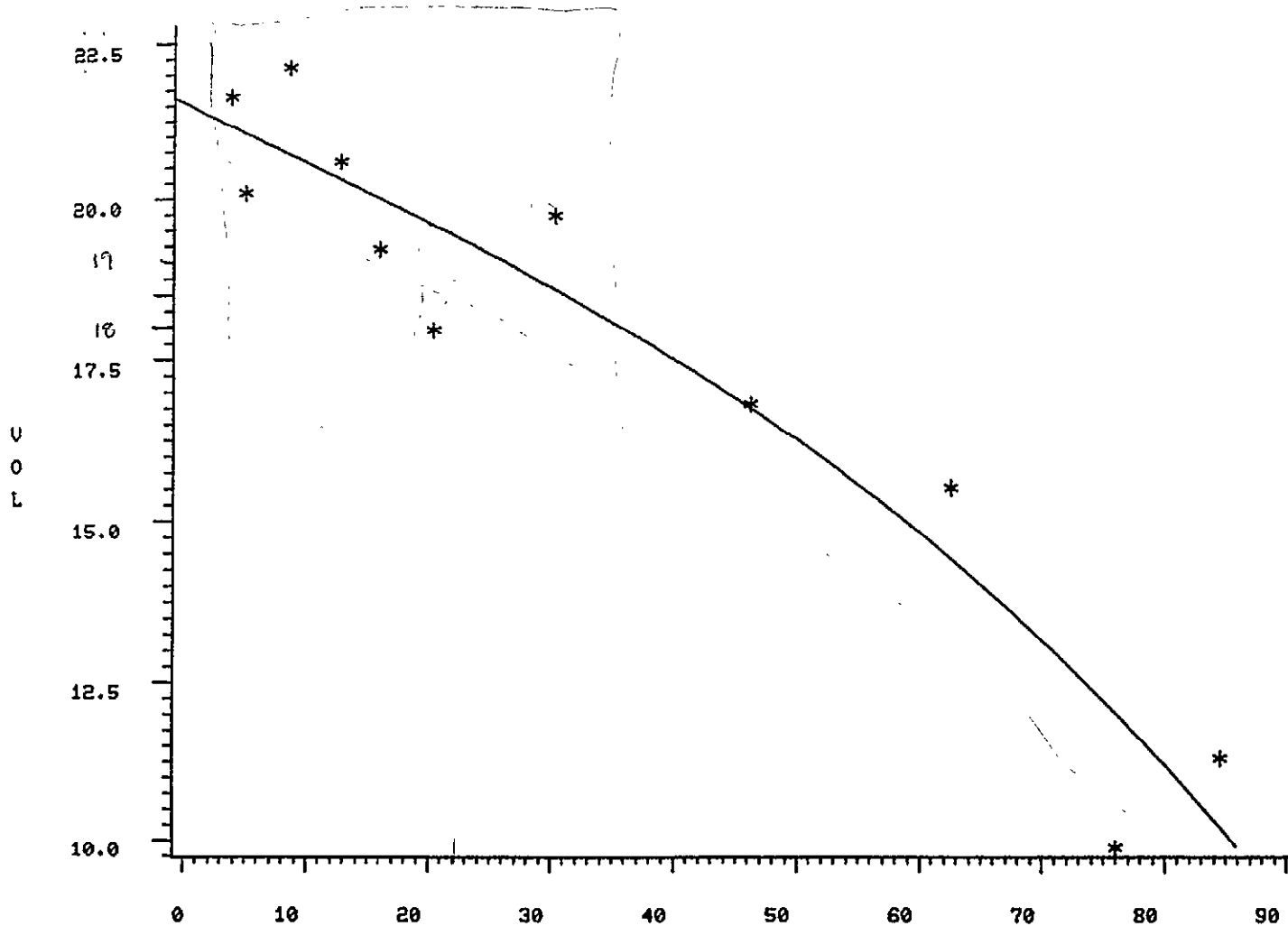
# BRENDA BTU VS. ASH



83-21

Brenda Seam

# BRENDA SEAM VOLS VS ASH



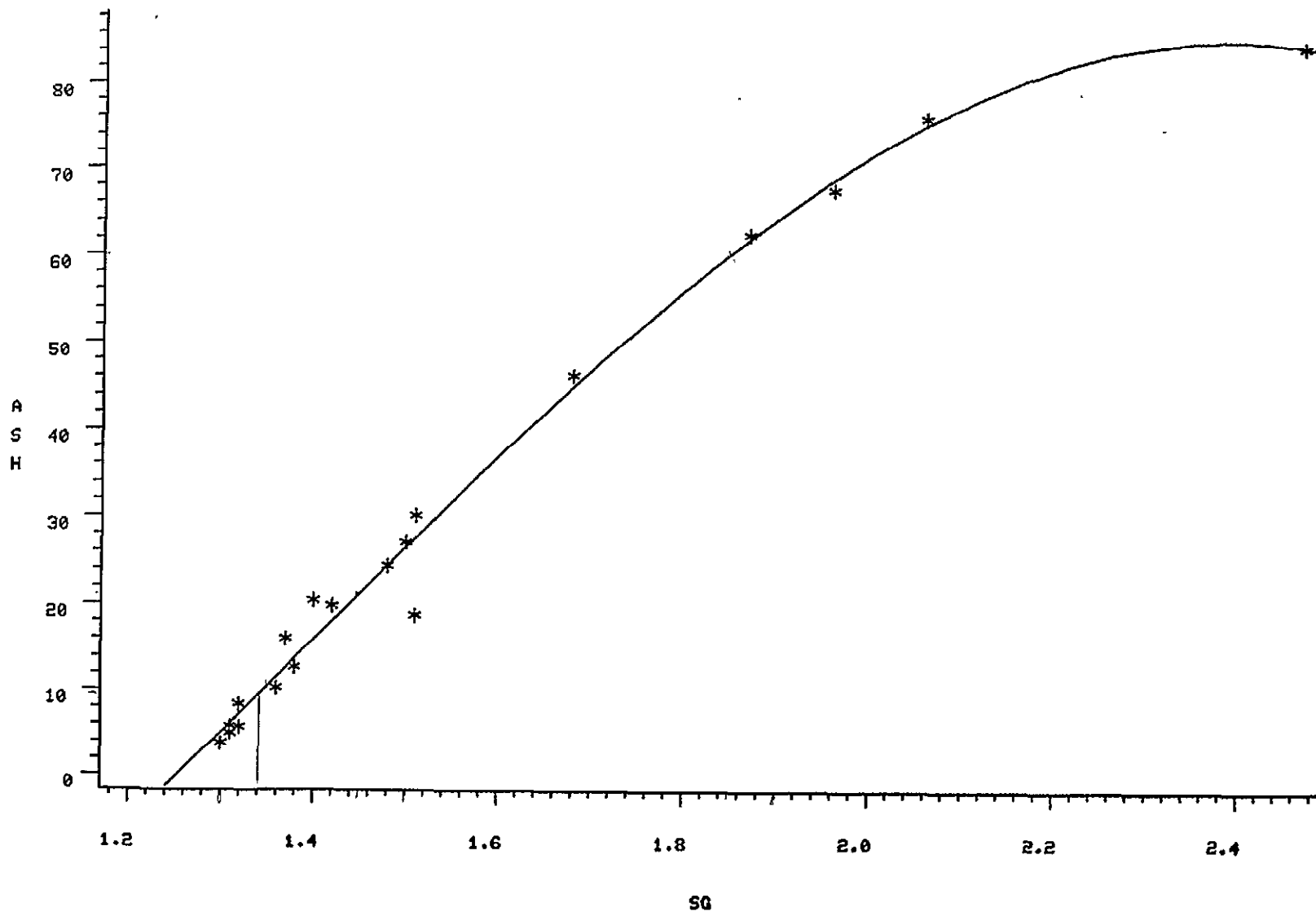
P<sub>3</sub>

ASH

P<sub>2</sub>

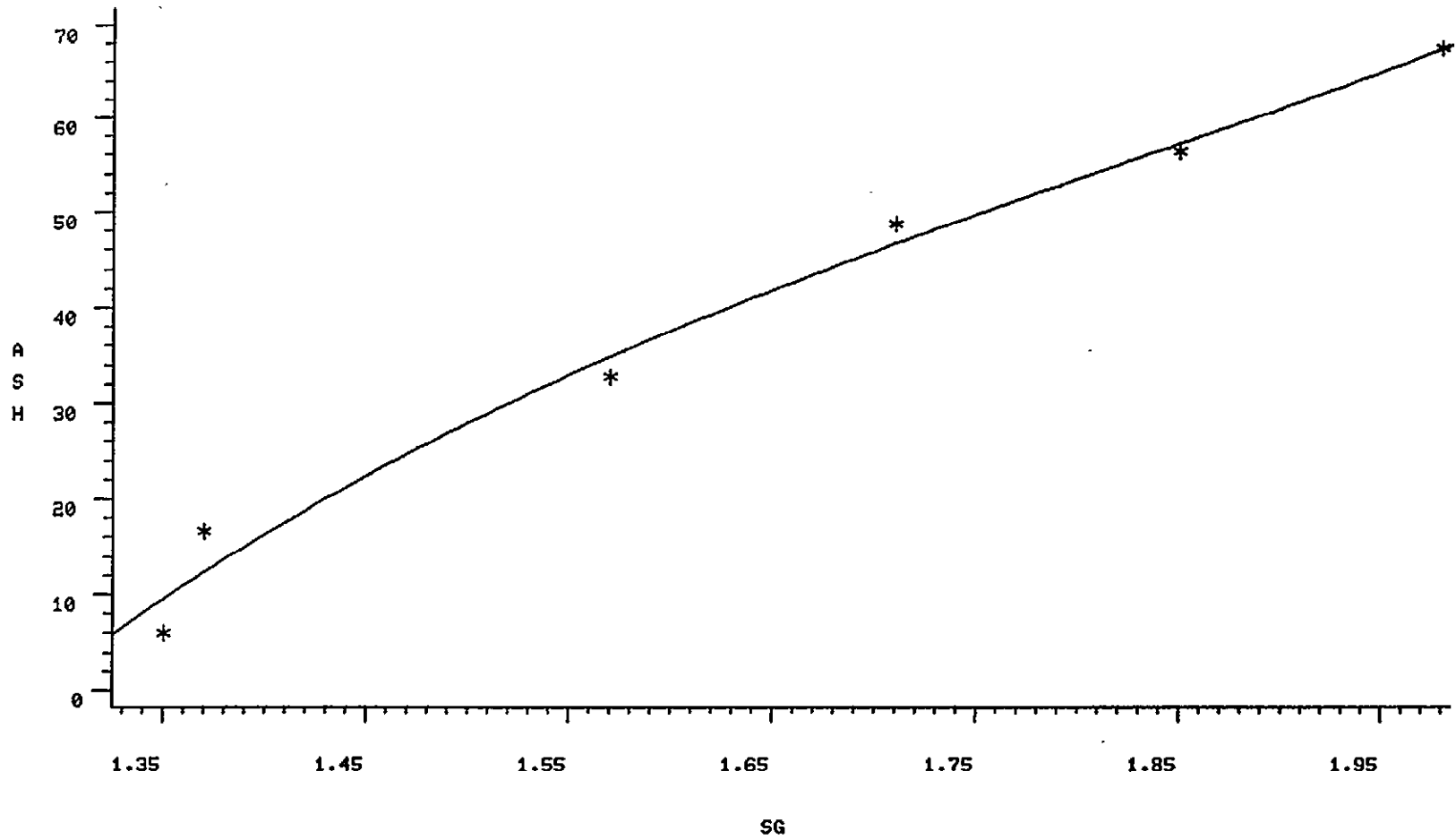


# BRENDA SEAM SG VS. ASH

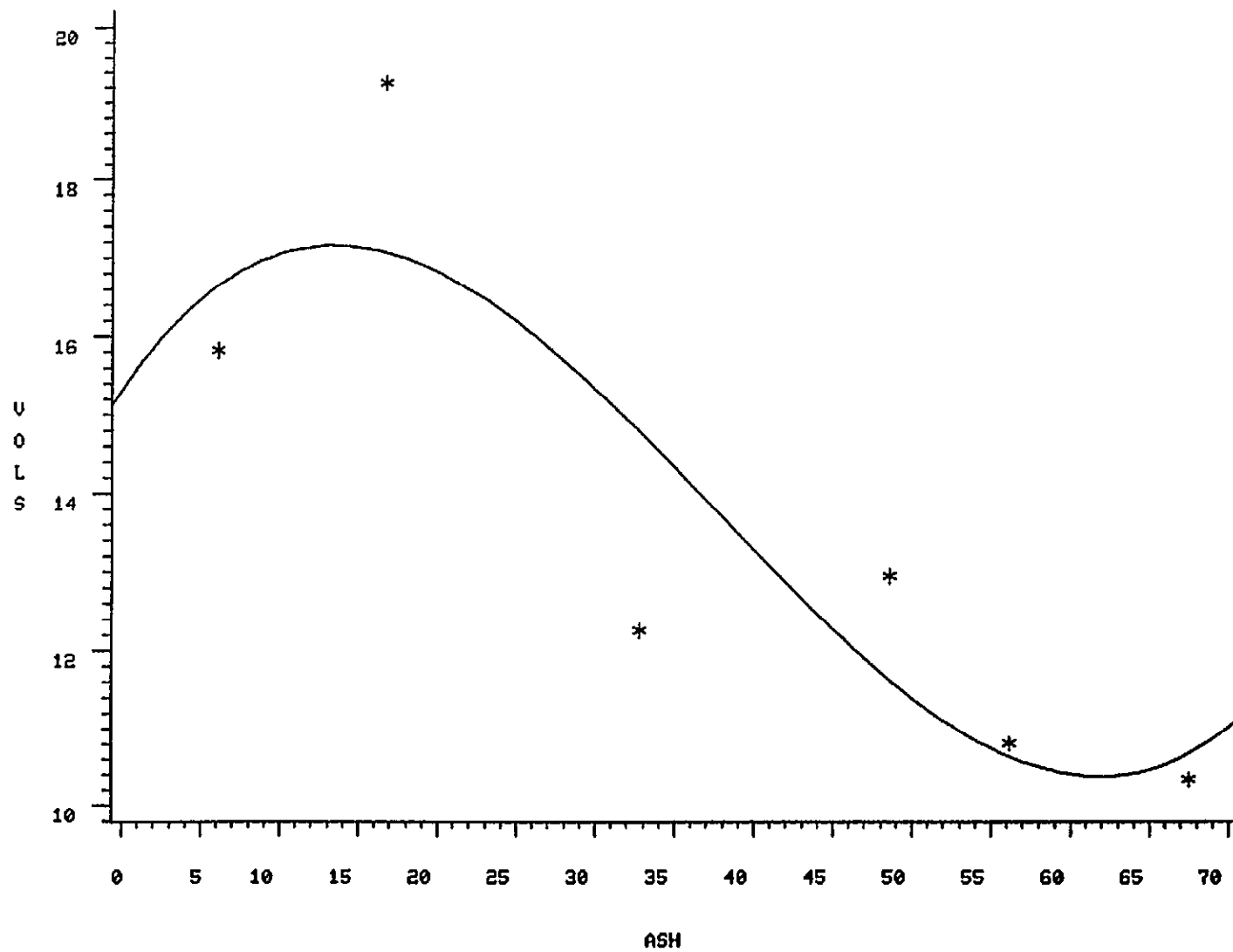


DAVE SEAM

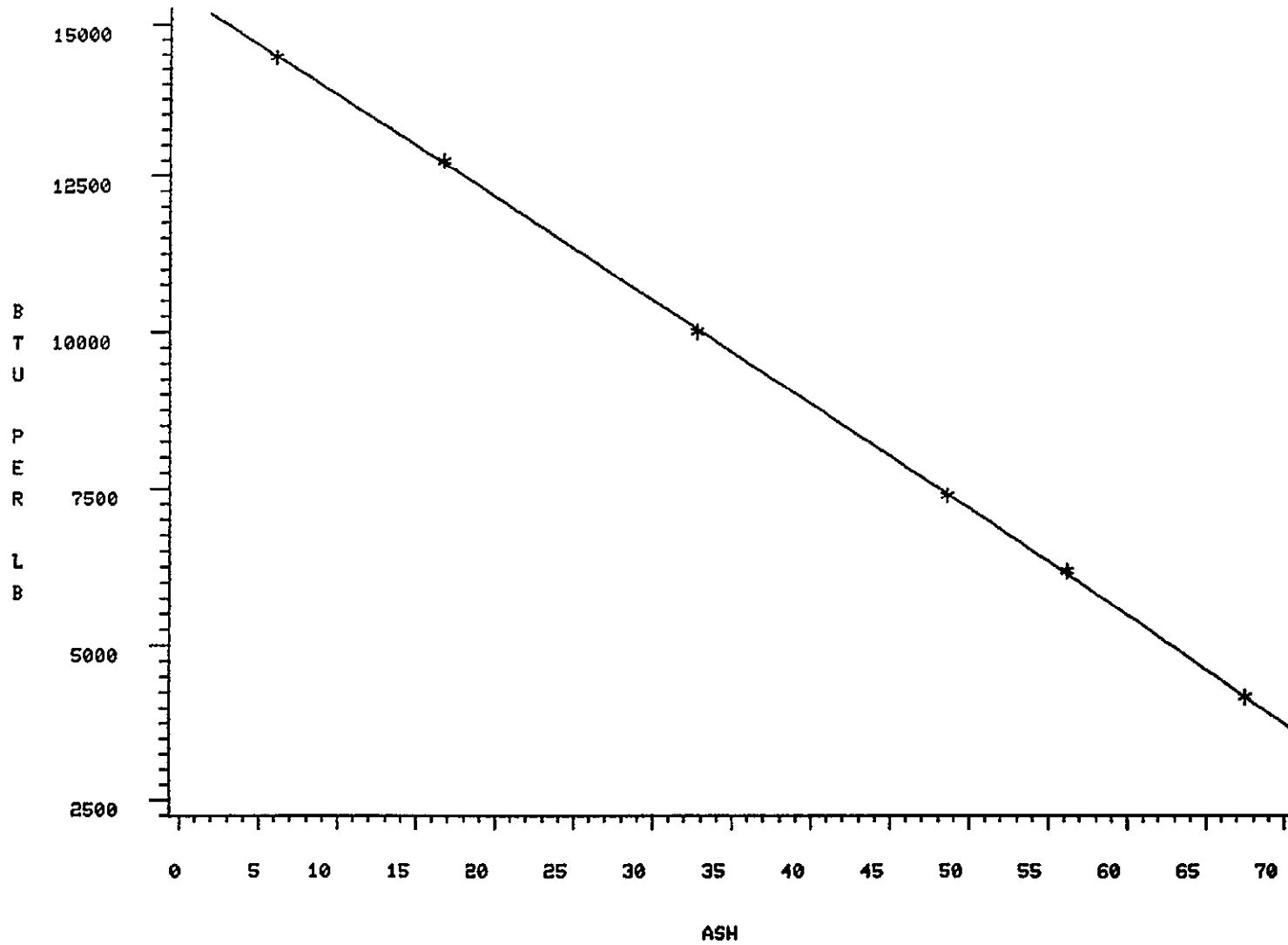
# 83-14 SG VS. ASH



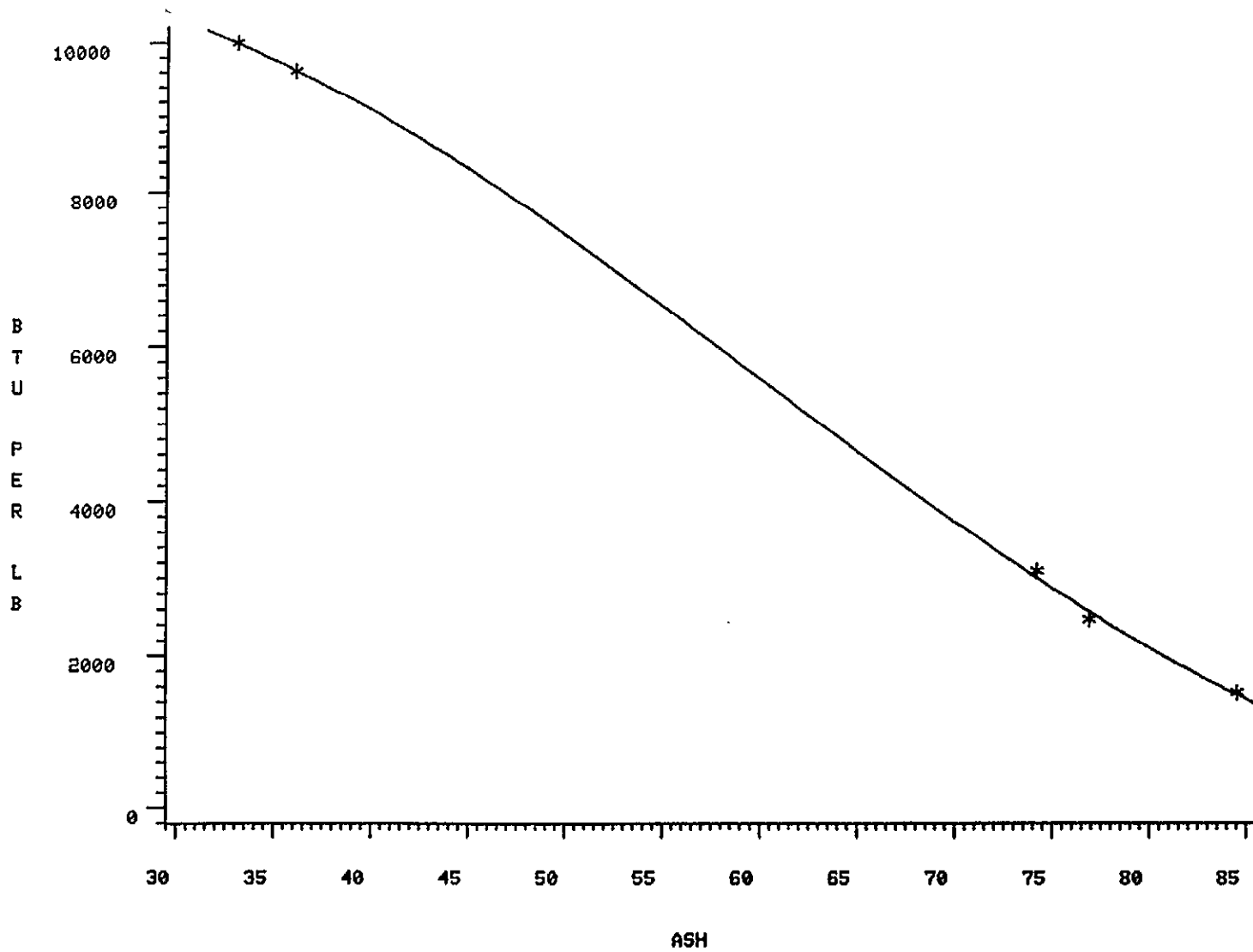
# 83-14 DAVE SEAM ASH VS. VOLTS



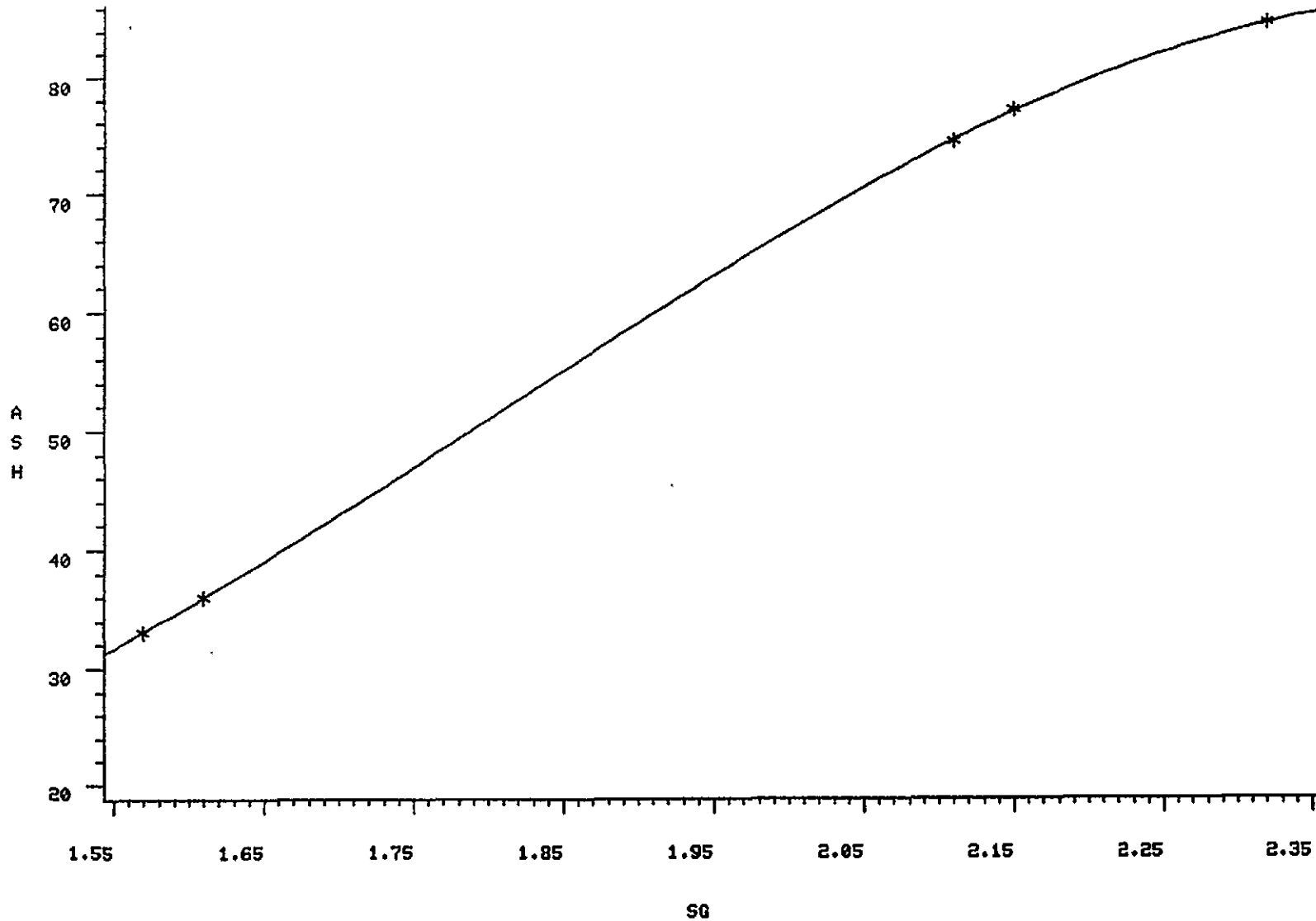
# 83-14 DAVE SEAM ASH VS. BTU



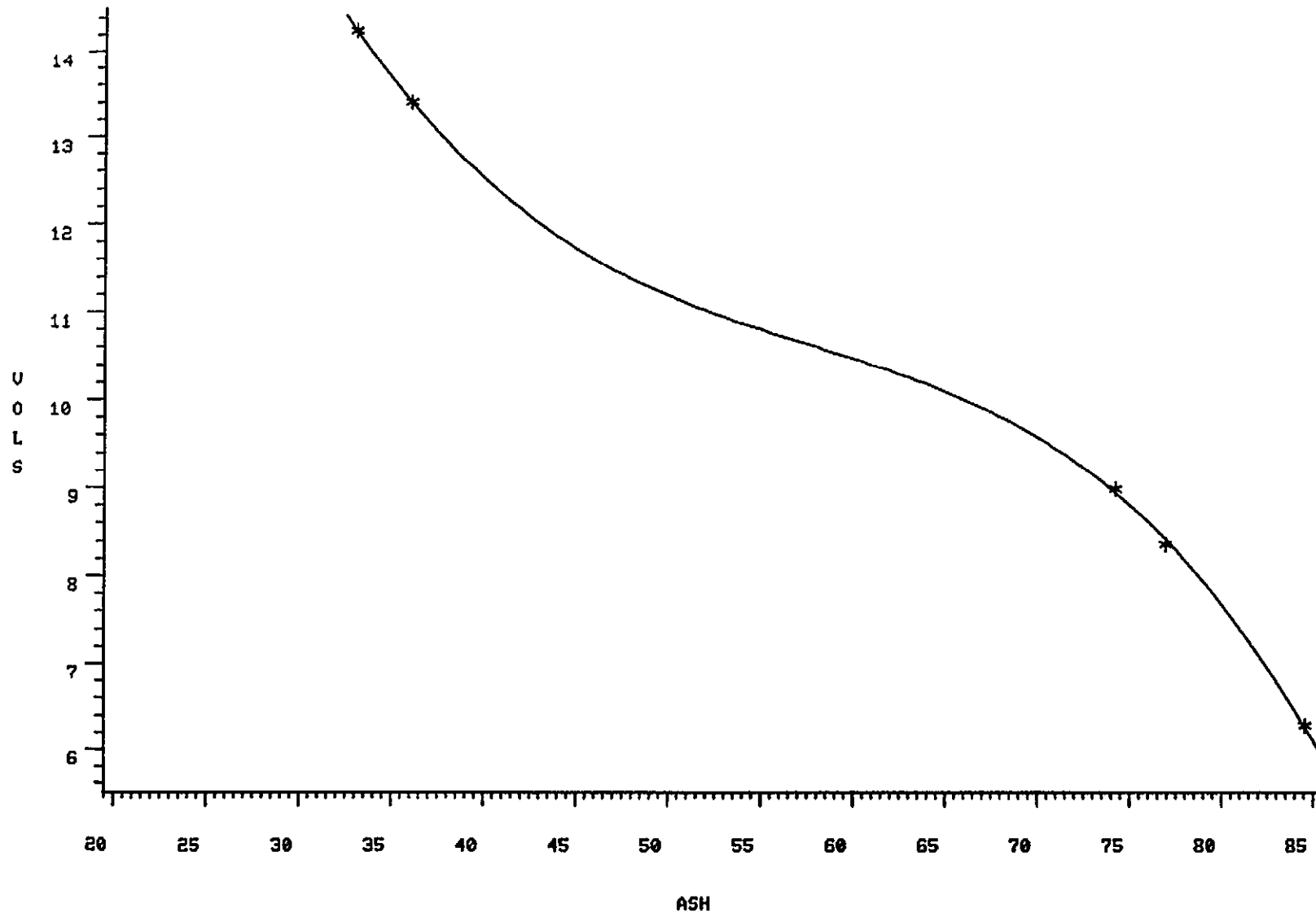
# 83-14 RAT SEAM ASH VS. BTU



# 83-14 RAT SEAM SG VS. ASH



# 83-14 RAT SEAM ASH VS. V.M



# 25155

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAE  | 83-14 | 63.22     | 63.85      | M   |                  |     |             |     | B1 |

630

CARD COLUMN:

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY I   | S |   | 09   | 83 |           | 100         |                  |     | B2 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.19               | 86.20 | 10.81      | 6178              | 1     |                                       | B5 |
| R           | 2.07               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .35               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.85      | B8 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FE0 | CA0 | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



# #25155

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
| L30  | 83-14 | 65.39     | 65.89      | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C  | T  | DATE   |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|--------|-------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M      | YR    |           |             | SINK             | FLT |    |
|     |         |    |    | PLY II | S     |           |             |                  | 09  |    |
| 20  | 22      | 27 | 28 | 29     | 31 33 | 40        | 44          | 48               | 52  | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .97                | 32.79 | 12.25      | 10002             | 1     | B5                                    |    |
| R           | 2.56               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 1.56              |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|-------------|--------------|-----------|----|------|----|
|                        |             |              |           |    | MSTR |    |
|                        |             |              | 1.47      | B8 |      |    |
| 20                     | 25          | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25099

PLY III

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-14 | 65-90     | 67-36      | 81  |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY III | S |   | 08   | 73 | DAVE      | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .54                | 6.10 | 15.82      | 14450             | 1     | B5                                    |    |
| R           | 4.40               |      |            |                   |       | B5                                    |    |
| D           |                    |      |            |                   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .61               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              | 1.35      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25099

CODM QUALITY DATA

PLY IV

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
| FAL  | 83-14 | 67-50     | 68-64      | PA  |                  |     |            |     | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY IV  | 3 |   | 08   | 83 | DAVE      | 100         |                  |     | B2 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 22 27 28 29 31 33 40 44 48 52 71

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .99                | 6749 | 10.35      | 4174              | 1     | B5                                    |    |
| R           | 4.65               |      |            |                   |       | B5                                    |    |
| D           |                    |      |            |                   |       | B5                                    |    |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.24              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 42 71

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.98      | B8 |

20 23 28 33 38 41 71

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 24 28 32 36 40 44 48 52 71

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 45 50 55 71

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25099

CODM QUALITY DATA

PLY I

CARD COLUMN:

| PROS | HOLE | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |      |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 8374 | 68.80     | 69.41      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY I   | 5 |   | 08   | 83 | DAVE      | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .73                | 48.60 | 12.95      | 7392              | 1     | B5                                    |    |
| R           | 3.21               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.26              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.71      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALD | TIO | FE0 | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25099

PLY VI

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY VI  | S |   | 08   | 83 | RAT       | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .92                | 74.22 | 8.99       | 3096              | 1     |                                       | B5 |
| R           | 3.90               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S & G RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-14 | 138.64    | 139.39     | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .26               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 2.11      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25099

140-33

PLY VII

| PROS | HOLE  | TOP (F/M) | BASE (F/M)        | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|-------------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |                   |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-14 | 139.39    | <del>139.56</del> | M   |                  |     |             |     | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE    |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|---------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M       | YR |           |             | SINK             | FLT |    |
|     |         |   |   | PLY VII | S  |           |             | 08               | 83  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .47                | 36.25 | 13.39      | 9613              | 1     | B5                                    |    |
| R           | 3.21               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .48               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.61      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25099

PLY III

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE    |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|---------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M       | YR |           |             | SINK             | FLT |    |
|     |         |   |   | PLY III | 5  |           |             | 08               | 83  |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .96                | 76.93 | 8.37       | 2467              | 1     | B5                                    |    |
| R           | 5.84               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S G RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-----------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN       | MAX |    |
| FAL  | P3-14 | 140.33    | 140.61     | M   |                  |     |           |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .15               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|------|------------------------|--------|----|
|                             |    |      | (F)                    | POISES |    |
| NA                          | K  |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       |  |  |  | ID |
|-------------------------|----|----|-------|--|--|--|----|
| KO                      | PO | SO | UNDTR |  |  |  |    |
|                         |    |    |       |  |  |  | C4 |

| MINERAL ANALYSIS OF ASH |    |    |       |  |  |  | ID |
|-------------------------|----|----|-------|--|--|--|----|
| KO                      | PO | SO | UNDTR |  |  |  |    |
|                         |    |    |       |  |  |  | C4 |

20 22 27 28 29 31 33 40 44 48 52 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25099

PLY IX

CARD COLUMN:

| PROS | HOLE  | TOP (F/H) | BASE (F/H) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| FAL  | 83-14 | 140.61    | 142.55     | M   |                  |     |             | 57  | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |        | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|--------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR     |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | PLY IX |           |             | 5                |     |    | 08 |
| 20  | 22      | 27 | 28 | 29   | 31     | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .56                | 33.10 | 14.24      | 10000             | 1     |                                       | B5 |
| R           | 2.32               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .60               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.57      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

#25099

PLY X

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| FAL  | 83-14 | 142.55    | 142.89     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | PLY X   | S  |    | 08   | 83 | RAT       | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .92                | 84.84 | 629        | 1521              | 1     |                                       | B5 |
| R           | 3.17               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .36               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DPHM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 2.32      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

142.89

#25099

PLY XI

| PROS | HOLE  | TOP (F/H) | BASE (F/H) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-14 | 142.91    | 143.41     | M   |                  |     |             |     | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE   |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|--------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M      | YR |           |             | SINK             | FLT |    |
|     |         |   |   | PLY XI | S  |           |             | 08               | 83  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .71                | 45.70 | 12.41      | 79.86             | 1     |                                       | B5 |
| R           | 1.48               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .52               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.69      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

PLY II  
CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |    |    |    |    |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|----|----|----|----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |    |    |    |    |    |
| 20  | 22      |   |   | 27   | 28 |           |             | 29               | 31  | 33 | 40 | 44 | 46 | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           |                    |     |            |                   |       |                                          | B5 |
| R           |                    |     |            |                   |       |                                          | B5 |
| D           |                    |     |            |                   |       |                                          | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 1/2                 |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-14 | 65.39     | 65.89      |     |                  |     |             |     | B1 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           |                   |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

COQM QUALITY DATA

PLY III

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     |         |   |   |      |    |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 43 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           |                    |     |            |                   |       |                                       | B5 |
| R           |                    |     |            |                   |       |                                       | B5 |
| D           |                    |     |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DOPM |    |
| 1/2                 |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SiO                     | AlO | TiO | FeO | CaO | NGO | NAD |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-14 | 65.90     | 67.36      |     |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           |                   |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25155

CARD COLUMN:

| LAB | LAB NUM      | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|--------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |              |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | Scam1, PLY 1 | S |   | 09   | 83 |           | 100         |                  |     | B2 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .80                | 23.77 | 20.02      | 11692             | 1     |                                       | B5 |
| R           | 3.37               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S G RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-----------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN       | MAX |    |
| 630  | 83-17 | 76.13     | 79.62      |     |                  |     |           |     | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .47               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.48      | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155

CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM   | C | T | DATE |    | UNIT NAME | WT % OF | WT % OF |          | ID |
|-----|-----------|---|---|------|----|-----------|---------|---------|----------|----|
|     |           |   |   | M    | YR |           |         | TTL     | SCREENED |    |
|     |           |   |   |      |    |           |         | SINK    | FLT      |    |
|     | SEMI PLYD | S |   | 09   | 83 |           | 100     |         |          | B2 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |  | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|--|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |  |       |                                       |    |
| A           | .77                | 12.06 | 22.66      | 13531             |  | 1     |                                       | B5 |
| R           | 1.70               |       |            |                   |  |       |                                       | B5 |
| D           |                    |       |            |                   |  |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| 630  | 83-17 | 80.54     | 81.08      |     |                  |     |             |     | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .63               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              | 1.34      | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CARD COLUMN:

| LAB | LAB NUM   | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|-----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |           |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | 36M1 PL/1 | S |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .78                | 13.03 | 21.34      | 13267             | 1     |                                          | B5 |
| R           | 1.90               |       |            |                   |       |                                          | B5 |
| D           |                    |       |            |                   |       |                                          | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-17 | 81.28     | 81.64      |     |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 168               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.36      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

COBM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM         | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|-----------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                 |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM 2<br>PLY I | S |   | 09   | 83 | BRENDA    | 100         |                  |     | B1 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS<br>A,R,D | PROXIMATE ANALYSIS |      |            |                   |   | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|----------------|--------------------|------|------------|-------------------|---|------------------------------------------|----|
|                | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT |   |                                          |    |
| A              | 1.80               | 3.81 | 21.63      | 14943             | 1 | B5                                       |    |
| R              | 2.98               |      |            |                   |   | B5                                       |    |
| D              |                    | 3.84 | 21.80      | 15063             |   | B5                                       |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 5.5                 |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS<br>A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|----------------|--------------|---------|-----------------------|---|-------|---|----|
|                | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|                |              |         | NA                    | K | NA    | K |    |
| A              |              |         |                       |   |       |   | B9 |
| R              |              |         |                       |   |       |   | B9 |
| D              |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| 630  | 83-17 | 103.77    | 105.21     | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS<br>A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|----------------|-------------------|-----|-----|-----|------|-----|----|
|                | S %               | C % | H % | N % | CL % | O % |    |
| A              | .44               |     |     |     |      |     | B6 |
| R              |                   |     |     |     |      |     | B6 |
| D              |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.30      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.



# #25155

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM 2  |   |   | 09   | 83 | BRENDA    | 100         |                  |     | B2 |
|     | PLY II  | S |   |      |    |           |             |                  |     |    |

| BASIS A,R,D | PROXIMATE ANALYSIS 65-92 |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                     | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .74                      | 12.74 | 20.60      | 13062             | 1     |                                       | B5 |
| R           | 6.13                     |       |            |                   |       |                                       | B5 |
| D           |                          | 12.83 | 20.75      | 13159             |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
| 1                   |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SiO                     | AlO | TiO | FeO | CaO | MgO | NaO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
| FAL  | 83-17 | 106.34    | 107.31     | M   |                  |     |            |     | B1 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |      | ID |
|----------------|----|----|----|----|----|----|----|----|------|----|
| 01             | 04 | 12 | 19 | 26 | 27 | 32 | 37 | 41 | 4571 |    |
|                |    |    |    |    |    |    |    |    |      | B3 |
|                |    |    |    |    |    |    |    |    |      | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 12.5              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.38      | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

## CCDM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-17 | 107.36    | 113.46     |     |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM           | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|-------------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                   |   |   | M    | YR |           |             | SINK             | FLY |    |
|     | SEAM 2<br>PLY III | S |   | 09   | 83 | BRENDA    | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS 3-bit Ratio |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                           | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .79                            | 5.05 | 20.10      | 14611             | 1     |                                       | B5 |
| R           | 9.68                           |      |            | 74.06             |       |                                       | B5 |
| D           |                                | 5-09 | 20-26      | 14727             |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .28               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 2                   |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.31      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155

CCDM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| 630  | 83-17 | 132.98    | 133.87     |     |                  |     |             |     | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM         | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|-----------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                 |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM 3<br>PLY I | S |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .72                | 20.04 | 23.49      | 11626             | 1     |                                       | B5 |
| R           | 4.98               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .38               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              | 1.50      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155

## CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM 3  |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY II  | S |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .64                | 21.43 | 22.69      | 14120             | 1     |                                       | B5 |
| R           | 10.93              |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-17 | 13402     | 13433      |     |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .51               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.31      | B8 |

20 25 30 35 40 45 71

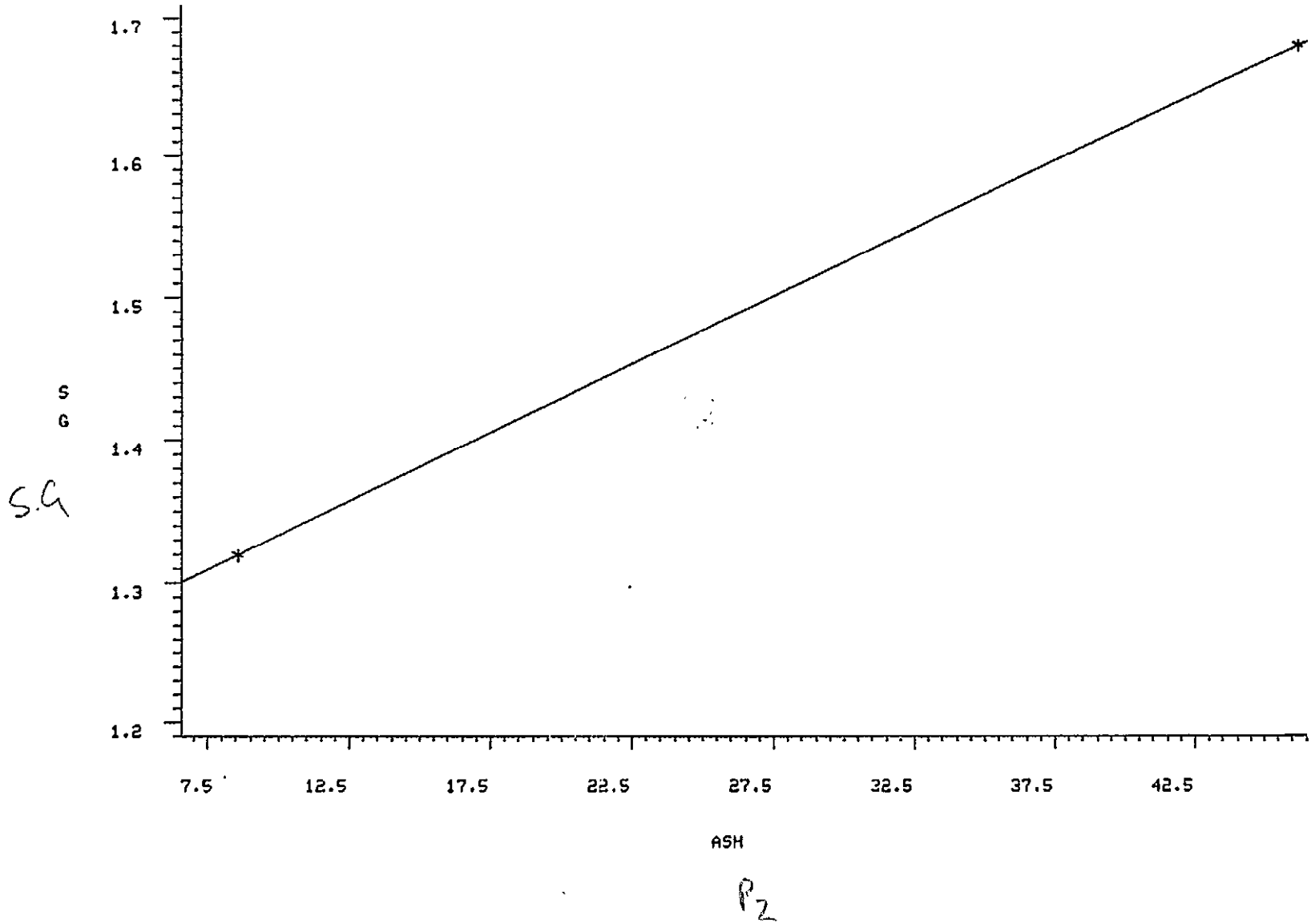
| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

# 83-18 SG VS ASH



# #25155

COMM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY I   | S |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .76                | 4/13 | 21.63      | 14782             | 1     | B5                                       |    |
| R           | 3.48               |      |            |                   |       | B5                                       |    |
| D           |                    |      |            |                   |       | B5                                       |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
| FAL  | 83-18 | 41-60     | 43-21      | M   |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.30              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.31      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-18 | 43.21     | 44.00      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PKY II  | S |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |  | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|--|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |  |                                          |    |
| A           | 117                | 77.89 | 11.24      | 2118              |  | 1                                        | B5 |
| R           | 3.08               |       |            |                   |  |                                          | B5 |
| D           |                    |       |            |                   |  |                                          | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .18               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 2.21      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=N | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155

## CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
| FAL  | 83-18 | 70.00     | 71.07      | M   |                  |     |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     |         |   |   |      |    |           |             |                  |     |    |
|     | PLY ID  | S |   | 09   | 83 |           | 103         |                  |     |    |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 22 27 28 29 31 33 40 44 48 52 71

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .85                | 21.87 | 17.92      | 11881             | 1     | B5                                    |    |
| R           | 5.80               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .42               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 42 71

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.40      | B8 |

20 23 28 33 38 41 71

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 24 28 32 36 40 44 48 52 71

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 45 50 55 71

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.



# #25155

## CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |       | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|-------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX   |    |
| FAL  | 83-18 | 71.08     | 71.40      | M     |                  |     |             |       | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 45 71 |    |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|-------|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |       |
|     | PLY IV  | S  |    | 09   | 83 |           | 100         |                  |     | B2    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .66                | 5.26 | 21.42      | 146.09            | 1     |                                       | B5 |
| R           | .632               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID    |
|-------------|-------------------|-----|-----|-----|------|-----|-------|
|             | S %               | C % | H % | N % | CL % | O % |       |
| A           | .57               |     |     |     |      |     | B6    |
| R           |                   |     |     |     |      |     | B6    |
| D           |                   |     |     |     |      |     | B6    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.31      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID    |
|-------------|--------------|---------|-----------------------|----|-------|----|-------|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |       |
|             |              |         | NA                    | K  | NA    | K  |       |
| A           |              |         |                       |    |       |    | B9    |
| R           |              |         |                       |    |       |    | B9    |
| D           |              |         |                       |    |       |    | B9    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID    |
|-------------------------|-----|-----|-----|-----|-----|-----|-------|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |       |
|                         |     |     |     |     |     |     | C3    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| FAL  | 83-18 | 71.60     | 73.09      | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | PLY II  | S  |    | 09   | 83 |           | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .65                | 9.12 | 21.77      | 13869             | 1     |                                       | B5 |
| R           | 4.71               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .57               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.36      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |    |
|-----------------------------|----|------|------------------------|--------|----|----|----|
|                             |    |      | (F)                    | POISES |    |    |    |
| NA                          | K  |      |                        |        | C2 |    |    |
| 20                          | 26 | 32   | 37                     | 41     | 45 | 49 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-18 | 73-09     | 74.87      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PHY II  | S |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.13               | 75.6 | 10.29      | 2854              | 1     |                                       | B5 |
| R           | 4.61               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .15               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 2.07      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25155

CARD COLUMN:

| LAB | LAB NUM            | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|--------------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                    |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY <del>III</del> | S |   | 09   | 83 |           | 100         |                  |     | B2 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.10               | 43.38 | 16.04      | 8477              | 1     |                                       | B5 |
| R           | 2.30               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-18 | 74.87     | 75.33      | M   |                  |     |             |     | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 43                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.64      | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     |         |   |   |      |    |           |             |                  |     |    |
|     | PLY III | S |   | 09   | 83 | BRENDA    | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS 60.77 |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                     | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .87                      | 20.41 | 17.94      | 12322             | 1     |                                       | B5 |
| R           | 2.49                     |       |            |                   |       |                                       | B5 |
| D           |                          | 20.59 | 18.11      | 12430             |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 2 1/2               |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| 1630 | 83-18 | 95-81     | 96-00      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.83              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.40      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    |      |    |           |             |                  |     |    |    |
|     | PLY IX  | S  |    | 09   | 83 | BRENDA    | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS 3.13 |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|-------------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                    | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.01                    | 84.54 | 11.31      | 1027              | 1     |                                       | B5 |
| R           | 1.22                    |       |            |                   |       |                                       | B5 |
| D           |                         | 85.41 | 11.42      | 1037              |       |                                       | B5 |
| 20          | 21                      | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
| —                   |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
| 1630 | 83-18 | 96-00     | 96-72      | M   |                  |     |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .09               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 2.47      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

#25155

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |       | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|-------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX   |    |
| 630  | 83-18 | 96-72     | 97-63      | M     |                  |     |             |       | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 45 71 |    |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|-------|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |       |
|     |         |    |    |      |       |           |             |                  |     |       |
|     | PLY X   | S  |    | 09   | 83    | RENDER    | 100         |                  |     |       |
| 20  | 22      | 27 | 28 | 29   | 31 33 |           | 40          | 44               | 48  | 52 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |    | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|----|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |    |                                          |    |
| A           | 1.85               | 15.99 | 19.21      | 12999             | 1  |                                          | B5 |
| R           | 5.13               |       |            |                   |    |                                          | B5 |
| D           |                    | 16.13 | 19.37      | 13110             |    |                                          | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41 | 42                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .47               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
| 6 1/2               |                    |           |           |          | B7 |
| 20                  | 23                 | 28        | 33        | 38       | 41 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.37      | B8 |
| 20                     | 25           | 30           | 35        | 40 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |
|-------------|--------------|---------|-----------------------|----|-------|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |
| A           |              |         |                       |    |       |    | B9 |
| R           |              |         |                       |    |       |    | B9 |
| D           |              |         |                       |    |       |    | B9 |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|----|------|------------------------|--------|----|
| NA                          | K  |    |      | (F)                    | POISES |    |
|                             |    |    |      |                        |        | C2 |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |
| 20                      | 25 | 30 | 35    | 40 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| 630  | 83-18 | 97.63     | 98.71      | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | PLY XI  | S  |    | 09   | 83 | BREANDA   | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS 49.11 |       |            |                   |    | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|-------|------------|-------------------|----|------------------------------------------|----|
|             | MSTR                     | ASH   | VOL MATTER | CALORIFIC CONTENT |    |                                          |    |
| A           | .95                      | 30.21 | 19.73      | 10648             |    | 1                                        | B5 |
| R           | 6.37                     |       |            |                   |    |                                          | B5 |
| D           |                          | 30.50 | 19.92      | 10747             |    |                                          | B5 |
| 20          | 21                       | 26    | 31         | 36                | 41 | 42                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .33               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
| 7 1/2               |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.47      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             |              |         | ACID                  |    | WATER |    |    |    |
|             | PYRITIC      | SULFATE | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

#25155

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
| FAL  | 83-18 | 98.71     | 100.17     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |
|     |         |    |    |      |       |           |             |                  |     |    |
|     | PLY XL  | S  |    | 09   | 83    | BRENDA    | 100         |                  |     | B2 |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44          | 48               | 52  | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.89               | 75.90 | 9.91       | 2919              | 1     |                                       | B5 |
| R           | 3.70               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .10               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 2.06      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| 630  | 83-18 | 100-17    | 101-90     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    |      |    |           |             |                  |     |    |    |
|     | PLH III | S  |    | 09   | 83 | BRENDA    | 100         |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 15                |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.31               | 62.48 | 15.82      | 4970              | 1     | B5                                    |    |
| R           | 3.37               |       |            |                   |       | B5                                    |    |
| D           |                    | 63.31 | 15.73      | 5036              |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.87      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPN |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |    |
|-----------------------------|----|------|------------------------|--------|----|----|----|
|                             |    |      | (F)                    | POISES |    |    |    |
| NA                          | K  |      |                        |        | C2 |    |    |
| 20                          | 26 | 32   | 37                     | 41     | 45 | 49 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| 630  | 83-18 | 101.90    | 104.36     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    |      |    |           |             |                  |     |    |    |
|     | PL4     | S  |    | 09   | 83 | BRENDA    | 100         |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .85                | 8.25 | 22.11      | 14239             | 1     |                                       | B5 |
| R           | 460                |      |            |                   |       |                                       | B5 |
| D           |                    | 8.62 | 22.30      | 14361             |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .35               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
| 8                   |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.32      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CA0 | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNOTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| 630  | 83-18 | 104-36    | 104-52     | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     |         |   |   |      |    |           |             |                  |     |    |
|     | PLY 22  | S |   | 09   | 83 | BRENDA    | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS 35-95 |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                     | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.01                     | 46.23 | 16.81      | 7709              | 1     |                                       | B5 |
| R           | 244                      |       |            |                   |       |                                       | B5 |
| D           |                          | 46.70 | 16.98      | 7788              |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .30               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              | 1.68      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY 201 | S |   | 09   | 89 |           | 100         |                  |     | B2 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.11               | 66.87 | 12.66      | 4382              | 1     |                                       | B5 |
| R           | 3.06               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SiO                     | AlO | TiO | FeO | CaO | MgO | NaO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| 630  | 8J-18 | 155.43    | 157.00     | M   |                  |     |             |     | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .23               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.94      | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S & G RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
| 630  | 83-18 | 158.88    | 160-10     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|-------|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |       |
|     | PLY 8X  | S  |    | 09   | 83 |           | 100         |                  |     | B2    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID    |
|----------------|----|----|----|----|----|----|----|----|-------|
|                |    |    |    |    |    |    |    |    | B3    |
|                |    |    |    |    |    |    |    |    | B4    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .80                | 9.36 | 18.89      | 14007             | 1     |                                       | B5 |
| R           | 8.38               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID    |
|-------------|-------------------|-----|-----|-----|------|-----|-------|
|             | S %               | C % | H % | N % | CL % | O % |       |
| A           | .57               |     |     |     |      |     | B6    |
| R           |                   |     |     |     |      |     | B6    |
| D           |                   |     |     |     |      |     | B6    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID    |
|---------------------|--------------------|-----------|-----------|----------|-------|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |       |
|                     |                    |           |           |          | B7    |
| 20                  | 23                 | 28        | 33        | 38       | 41 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID       |
|------------------------|--------------|--------------|-----------|----------|
|                        |              |              |           |          |
|                        |              |              | 1.33      | B8       |
| 20                     | 25           | 30           | 35        | 40 45 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID    |
|-------------|--------------|---------|-----------------------|----|-------|----|-------|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |       |
|             |              |         | NA                    | K  | NA    | K  |       |
| A           |              |         |                       |    |       |    | B9    |
| R           |              |         |                       |    |       |    | B9    |
| D           |              |         |                       |    |       |    | B9    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID    |
|-----------------------------|----|----|------|------------------------|--------|-------|
| NA                          | K  |    |      | (F)                    | POISES |       |
|                             |    |    |      |                        |        | C2    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID    |
|-------------------------|-----|-----|-----|-----|-----|-----|-------|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |       |
|                         |     |     |     |     |     |     | C3    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID    |
|-------------------------|----|----|-------|-------|
| KO                      | PO | SO | UNDTR |       |
|                         |    |    |       | C4    |
| 20                      | 25 | 30 | 35    | 40 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

#25155

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | PLY XX  | S |   | 09   | 83 |           | 100         |                  |     | B1 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .67                | 4.61 | 20.26      | 14827             | 1     |                                          | B5 |
| R           | 3.31               |      |            |                   |       |                                          | B5 |
| D           |                    |      |            |                   |       |                                          | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
| 630  | 83-18 | 160-10    | 161-52     | M   |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .56               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              | 1.31      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

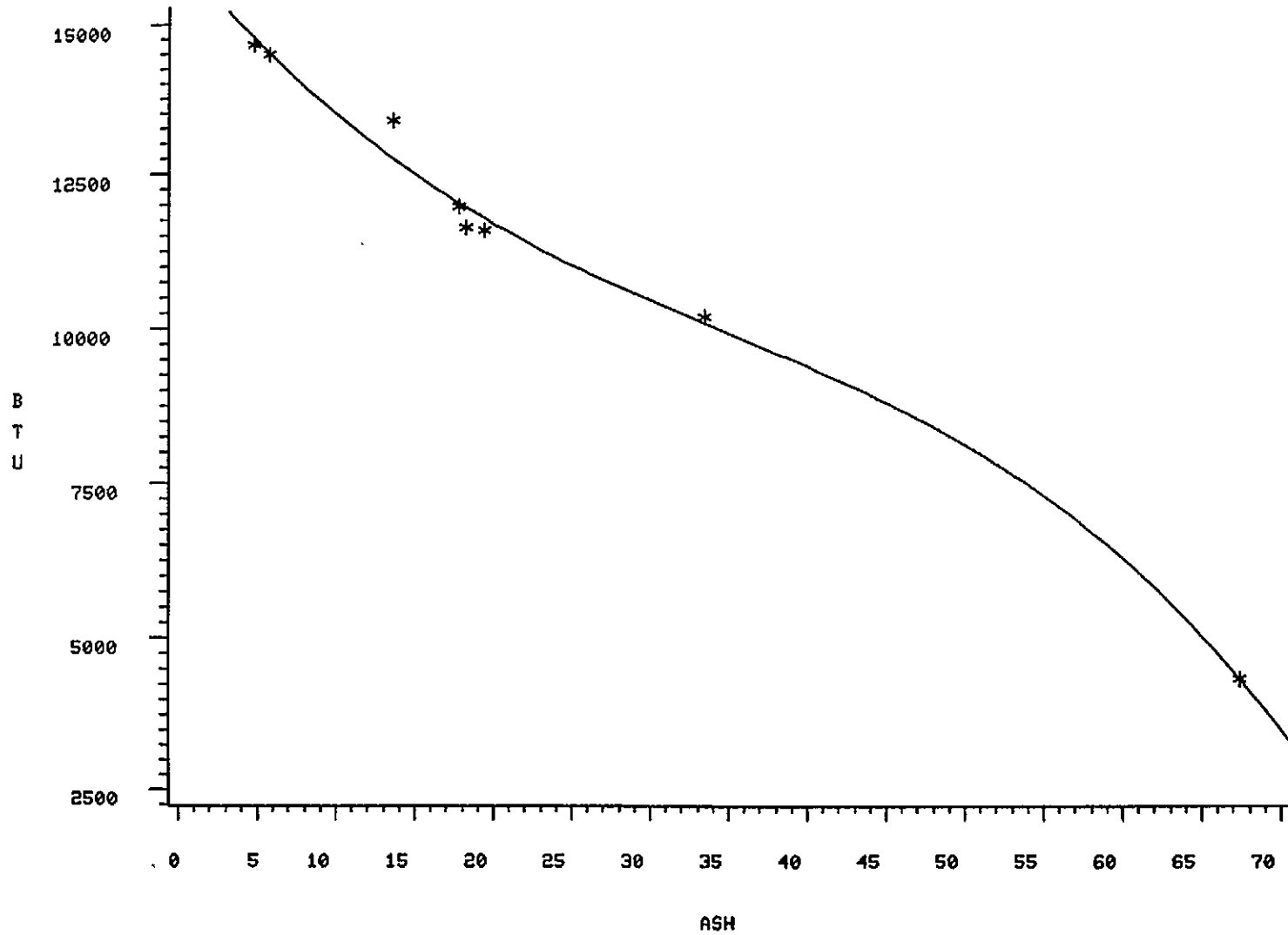
20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

20 25 30 35 40 71

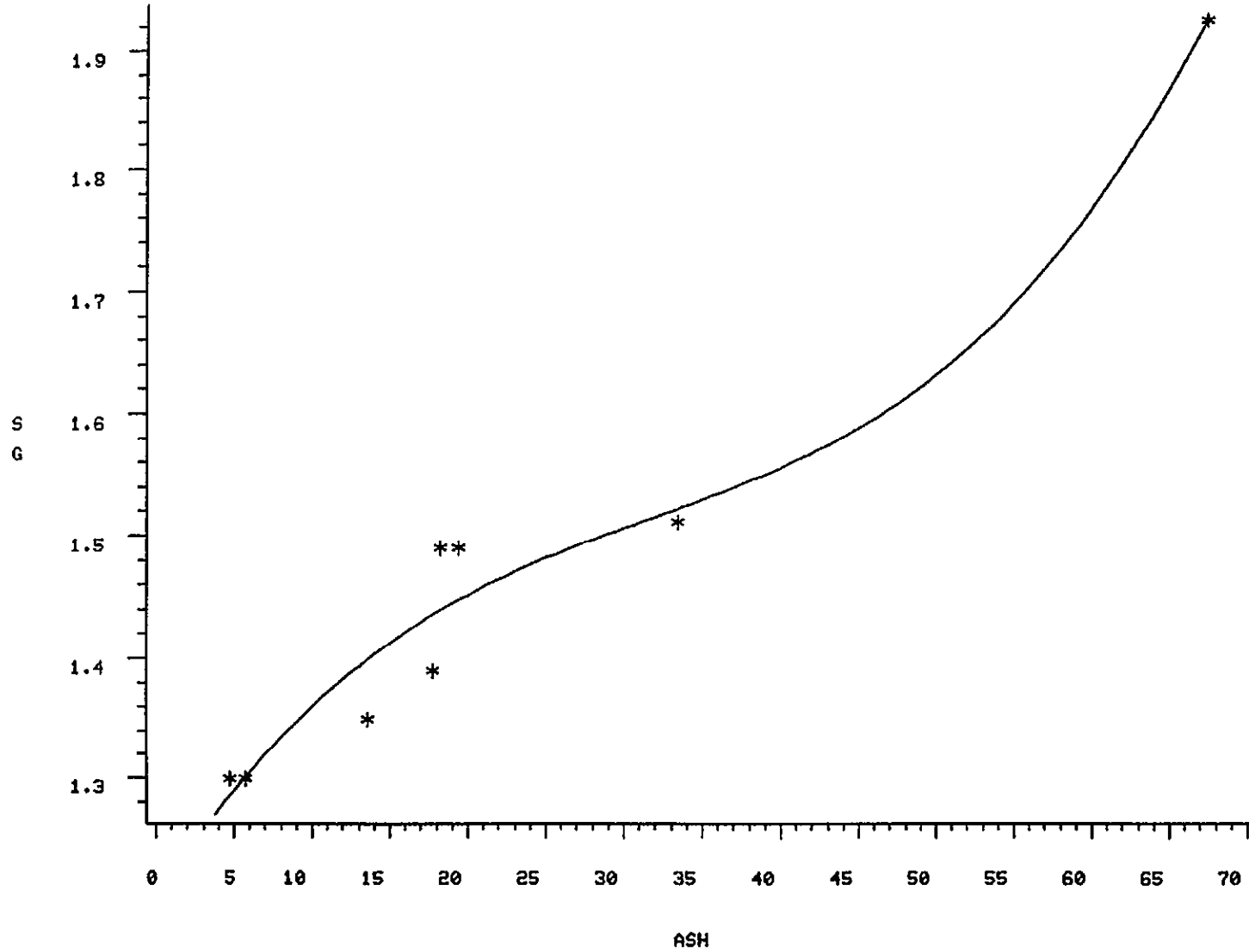
KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

83-19





83-19



CODM QUALITY DATA

# #25155-1

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-19 | 30.08     | 30.82      | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|-------|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |       |
|     | SEAM 1  |    |    |      |    |           | 100         |                  |     | B2    |
|     | PLY 1   | 5  |    | 09   | 83 |           |             |                  |     |       |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .89                | 6.43 | 20.83      | 14457             | 1     |                                       | B5 |
| R           | 2.96               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID    |
|-------------|-------------------|-----|-----|-----|------|-----|-------|
|             | S %               | C % | H % | N % | CL % | O % |       |
| A           | .46               |     |     |     |      |     | B6    |
| R           |                   |     |     |     |      |     | B6    |
| D           |                   |     |     |     |      |     | B6    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.32      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID    |
|-------------|--------------|---------|-----------------------|----|-------|----|-------|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |       |
|             |              |         | NA                    | K  | NA    | K  |       |
| A           |              |         |                       |    |       |    | B9    |
| R           |              |         |                       |    |       |    | B9    |
| D           |              |         |                       |    |       |    | B9    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 71 |

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RESOURCES GROUP

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID    |
|-----------------------------|----|----|------|------------------------|--------|-------|
| NA                          | K  |    |      | (F)                    | POISES |       |
|                             |    |    |      |                        |        | C2    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID    |
|-------------------------|-----|-----|-----|-----|-----|-----|-------|
| SIO                     | ALD | TIO | FE0 | CAD | MGO | NAO |       |
|                         |     |     |     |     |     |     |       |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 30.82     | 32.00      | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE   |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|--------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M      | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    | SEAM 1 | PLY 2 |           |             | S                |     |    | 09 |
| 20  | 22      | 27 | 28 | 29     | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |    | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|----|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |    |       |                                       |    |
| A           | .85                | 25.06 | 21.08      | 10810             | 1  |       | B5                                    |    |
| R           | 3.88               |       |            |                   |    |       | B5                                    |    |
| D           |                    |       |            |                   |    |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41 | 42    | 71                                    |    |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .34               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.41      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-1

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 38.0      | 38.92      | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C | T | DATE    |        | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|---------|--------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M       | YR     |           |             | SINK             | FLT |    |
|     |         |   |   | SEAM II | PLY II |           |             | S                |     |    |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 22 27 28 29 31 33 40 44 48 52 71

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .56                | 39.17 | 35.86      | 6780              | 1     |                                          | B5 |
| R           | 1.17               |       |            |                   |       |                                          | B5 |
| D           |                    |       |            |                   |       |                                          | B5 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .23               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 42 71

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.92      | B8 |

20 23 28 33 38 41 71

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 24 28 32 36 40 44 48 52 71

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNOTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 45 50 55 71

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM II |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY II  | 5 |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS 67.73 |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                     | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .82                      | 8.29 | 23.16      | 14448             | 1     |                                       | B5 |
| R           | 1.88                     |      |            |                   |       |                                       | B5 |
| D           |                          |      |            |                   |       |                                       | B5 |

20 21 26 (2.9) 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/H) | BASE (F/H) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 38.92     | 39.80      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .46               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.34      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25155-1

CARD COLUMN:

| LAB | LAB NUM  | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |          |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM III |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY I    | S |   |      |    |           |             |                  |     | B2 |

| BASIS | PROXIMATE ANALYSIS |       |       |            |                   | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------|--------------------|-------|-------|------------|-------------------|---------------------------------------|----|
|       | A,R,D              | MSTR  | ASH   | VOL MATTER | CALORIFIC CONTENT |                                       |    |
| A     | .92                | 17.47 | 18.30 | 12633      | 1                 |                                       | B5 |
| R     | 10.67              |       |       |            |                   |                                       | B5 |
| D     |                    |       |       |            |                   |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| BASIS | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------|--------------|---------|-----------------------|---|-------|---|----|
|       |              |         | ACID                  |   | WATER |   |    |
|       | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A     |              |         |                       |   |       |   | B9 |
| R     |              |         |                       |   |       |   | B9 |
| D     |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/H) | BASE (F/H) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |
|      | 83-19 | 44.56     | 45.91      | M   |                  |     |             |     | B1   |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B4 |

| BASIS | ULTIMATE ANALYSIS |     |     |     |     |      | ID |     |
|-------|-------------------|-----|-----|-----|-----|------|----|-----|
|       | A,R,D             | S % | C % | H % | N % | CL % |    | O % |
| A     | .43               |     |     |     |     |      |    | B6  |
| R     |                   |     |     |     |     |      |    | B6  |
| D     |                   |     |     |     |     |      |    | B6  |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.37      | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# # 25155-1

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S G RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-----------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN       | MAX |      |
|      | 83-19 | 45.91     | 46.33      |     |                  |     |           |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37        | 41  | 4571 |

| LAB | LAB NUM            | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|--------------------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |                    |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     |                    |    |    |      |    |           |             |                  |     |    |    |
|     | SEAM III<br>PLY II | S  |    | 09   | 83 |           | 100         |                  |     | B2 |    |
| 20  | 22                 | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .37                | 54.12 | 44.20      | 2892              | 1     |                                       | B5 |
| R           | .56                |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .11               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 2.40      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM             | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------------------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |                     |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM III<br>PLY III | S  |    | 09   | 83 |           | 100         |                  |     | B2 |    |
| 20  | 22                  | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS 65.53 |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                     | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .79                      | 6.69 | 26.99      | 14297             | 1     | B5                                    |    |
| R           | 2.35                     |      |            |                   |       | B5                                    |    |
| D           |                          |      |            |                   |       | B5                                    |    |
| 20          | 21                       | 26   | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |    |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |    |
|      | 83-19 | 46.33     | 46.94      |     |                  |     |            |     | B1 |    |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 45 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .58               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.31      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

# 25155-1

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 46.94     | 48.0       | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM            | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|--------------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                    |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM III<br>PLY IV | S |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |   | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|---|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |   |                                          |    |
| A           | 1.12               | 70.50 | 11.14      | 3936              | 1 |                                          | B5 |
| R           | 5.26               |       |            |                   |   |                                          | B5 |
| D           |                    |       |            |                   |   |                                          | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.18              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 2.00      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM IV |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY I   | S |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .95                | 16.68 | 19.26      | 12736             | 1     |                                       | B5 |
| R           | 2.01               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/H) | BASE (F/H) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 64.54     | 65.80      |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .78               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.37      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM II |   |   | 09   | 83 |           | 100         |                  |     | B1 |
|     | PLY I   | S |   |      |    |           |             |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 82                 | 13.82 | 14.84      | 13309             | 1     |                                       | B5 |
| R           | 424                |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 70.04     | 72.34      |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 172               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.78      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

4 25155-1

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (NM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 7402      | 7462       |     |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE    |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|---------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M       | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    | SEAM II | PLY I |           |             | S                |     |    | 09 |
| 20  | 22      | 27 | 28 | 29      | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |    | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|----|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |    |       |                                       |    |
| A           | .98                | 41.74 | 15.76      | 8685              | 1  |       | B5                                    |    |
| R           | 6.20               |       |            |                   |    |       | B5                                    |    |
| D           |                    |       |            |                   |    |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41 | 42    | 71                                    |    |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .37               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.53      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CA0 | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM II |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY II  | S |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.11               | 82.41 | 6.65       | 2032              | 1     |                                       | B5 |
| R           | 1.60               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-19 | 74.62     | 74.98      |     |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.09              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 2.18      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|--------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |              | SINK             | FLT |    |
|     | SEAM VI |   |   |      |    |           |              |                  |     | B1 |
|     | PLY III | S |   | 09   | 83 |           | 100          |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .89                | 14.61 | 26.40      | 12632             | 1     |                                       | B5 |
| R           | 2.59               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 74.98     | 76.44      |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.52              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.39      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# 25155-1

CARD COLUMN:

| LAB | LAB NUM  | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |          |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM VII |   |   |      |    | BREND?    |             |                  |     | B2 |
|     | PLY I    | S |   | 09   | 83 | Seam 7    | 100         |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .96                | 4.76 | 20.48      | 14636             | 1     |                                       | B5 |
| R           | 2.79               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-19 | 107.52    | 109.40     |     |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.35              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.30      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# 25155-1

CARD COLUMN:

| LAB | LAB NUM  | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |          |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM VII |   |   | 09   | 83 | SEAM 7    | 100         |                  |     | B2 |
|     | PLY II   | S |   |      |    |           |             |                  |     | B2 |

| BASIS A,R,D | PROXIMATE ANALYSIS 51.05 |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                     | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .71                      | 19.41 | 28.83      | 11567             | 1     |                                       | B5 |
| R           | 1.66                     |       |            |                   |       |                                       | B5 |
| D           |                          |       |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
| 3.5                 |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 109.40    | 109.80     |     |                  |     |             |     | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .28               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.49      | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



# #25155-1

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (NM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 109.80    | 110.92     |     |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM  | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|----------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |          |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM VII |    |    | 09   | 83 | SEAM 7    | 100         |                  |     | B2 |    |
|     | PLY III  | S  |    |      |    |           |             |                  |     |    |    |
| 20  | 22       | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.19               | 33.35 | 17.68      | 10165             | 1     | B5                                    |    |
| R           | 2.46               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 2.1               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
| 7 1/2               |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.57      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       |    | C1 |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM           | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|-------------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                   |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM III<br>PLY I | S |   | 09   | 83 | SEAM 8    | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .84                | 57.2 | 26.23      | 14472             | 1     |                                       | B5 |
| R           | 2.47               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
| 2.5                 |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 112.66    | 113.86     |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 34                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.30      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-19 | 113.83    | 114.48     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |       | ID |
|----------------|----|----|----|----|----|----|----|-------|----|
|                |    |    |    |    |    |    |    |       | B3 |
|                |    |    |    |    |    |    |    |       | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE      |        | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |
|-----|---------|----|----|-----------|--------|-----------|-------------|------------------|-------|----|
|     |         |    |    | M         | YR     |           |             | SINK             | FLT   |    |
|     |         |    |    | SEAM VIII | PLY II |           |             | S                |       |    |
| 20  | 22      | 27 | 28 | 29        | 31 33  | 40        | 44          | 48               | 52 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS 53-72 |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                     | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .80                      | 18.23 | 27.28      | 11604             | 1     |                                       | B5 |
| R           | 1.86                     |       |            |                   |       |                                       | B5 |
| D           |                          |       |            |                   |       |                                       | B5 |
| 20          | 21                       | 26    | 31         | 36                | 41 42 | 71                                    |    |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |       |       | ID |
|-------------|-------------------|-----|-----|-----|-------|-------|----|
|             | S %               | C % | H % | N % | CL %  | O %   |    |
| A           | 1.27              |     |     |     |       |       | B6 |
| R           |                   |     |     |     |       |       | B6 |
| D           |                   |     |     |     |       |       | B6 |
| 20          | 21                | 26  | 31  | 36  | 41 46 | 51 71 |    |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 2                   |                    |           |           |          | B7 |
| 20                  | 23                 | 28        | 33        | 38 41    | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.49      | B8 |
| 20                     | 25           | 30           | 35 40 45  | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |       | ID |
|-------------|--------------|---------|-----------------------|----|-------|-------|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |       |    |
|             |              |         | NA                    | K  | NA    | K     |    |
| A           |              |         |                       |    |       |       | B9 |
| R           |              |         |                       |    |       |       | B9 |
| D           |              |         |                       |    |       |       | B9 |
| 20          | 21           | 26      | 31                    | 36 | 41 46 | 51 71 |    |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |          | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|----------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |          |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID    |    |
|                        |     |       |       |                      |     |       |          | C1 |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48 52 71 |    |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|----|------|------------------------|--------|----|
| NA                          | K  |    |      | (F)                    | POISES |    |
|                             |    |    |      |                        |        | C2 |
| 20                          | 26 | 32 | 37   | 41                     | 45 49  | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |          | ID |
|-------------------------|-----|-----|-----|-----|-----|----------|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO      |    |
|                         |     |     |     |     |     |          |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50 55 71 |    |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |
| 20                      | 25 | 30 | 35 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM              | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                      |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM VIII<br>PLY III | S |   | 09   | 83 | SEAM 8    | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .77                | 13.67 | 19.92      | 13369             | .1    |                                          | B5 |
| R           | 1.87               |       |            |                   |       |                                          | B5 |
| D           |                    |       |            |                   |       |                                          | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 5                   |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-19 | 11448     | 115784     |     |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .34               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
| MSTR                   |              |              | 1.38      |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25155-1

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM 9  |    |    | 09   | 83 | SEAM 9    | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 28.3               | 17.77 | 21.46      | 11944             | 1     |                                       | B5 |
| R           | 3.07               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |    |      |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |    |      |
|      | 83-19 | 117.11    | 177.49     | M   |                  |     |            |     | B1 |    |      |
| 01   | 04    | 12        | 17.27      | 19  | 18.50            | 26  | 27         | 32  | 37 | 41 | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 1.69              |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.39      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM IX |   |   | 09   | 83 | SEAM 9    | 100         |                  |     | B2 |
|     | PLY II  | 5 |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.70               | 67.39 | 10.80      | 4339              | 1     |                                       | B5 |
| R           | 2.52               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DOPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 117.59    | 117.89     |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.24              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.92      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM X  |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY I   | 5 |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .82                | 29.86 | 17.77      | 10450             | 1     |                                       | B5 |
| R           | 2.22               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 87-19 | 1545      | 15760      |     |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .29               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.51      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-1

CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM XI |   |   |      |    |           | 100         |                  |     | B2 |
|     | PLY I   | S |   | 09   | 83 |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS | PROXIMATE ANALYSIS |       |       |            |                   | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------|--------------------|-------|-------|------------|-------------------|-------|---------------------------------------|----|
|       | A,R,D              | MSTR  | ASH   | VOL MATTER | CALORIFIC CONTENT |       |                                       |    |
| A     | .74                | 11.84 | 16.68 | 13502      | 1                 |       | B5                                    |    |
| R     | 6.87               |       |       |            |                   |       | B5                                    |    |
| D     |                    |       |       |            |                   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------|--------------|---------|-----------------------|---|-------|---|----|
|       |              |         | ACID                  |   | WATER |   |    |
|       | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A     |              |         |                       |   |       |   | B9 |
| R     |              |         |                       |   |       |   | B9 |
| D     |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 209.64    | 212.12     | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS | ULTIMATE ANALYSIS |     |     |     |     |      | ID |
|-------|-------------------|-----|-----|-----|-----|------|----|
|       | A,R,D             | S % | C % | H % | N % | CL % |    |
| A     | .39               |     |     |     |     |      | B6 |
| R     |                   |     |     |     |     |      | B6 |
| D     |                   |     |     |     |     |      | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.34      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71



# #25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTT | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEPM XI |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY II  | 5 |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.07               | 52.91 | 12.16      | 6849              | 1     |                                       | B5 |
| R           | 2.14               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. S. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 2/2/2     | 2/3, 79    |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .36               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.74      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1, B2, B3, B4, B5, B6, B7, B8, B9, C1, C2, C3, C4. LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM  | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |          |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM XII |   |   | 09   | 87 |           | 100         |                  |     | B2 |
|     | PLY I    | 5 |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |   | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|---|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT |   |       |                                       |    |
| A           | .83                | 5.01 | 18.14      | 14548             | 1 |       | B5                                    |    |
| R           | 3.38               |      |            |                   |   |       | B5                                    |    |
| D           |                    |      |            |                   |   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. & G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|---------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN           | MAX |    |
|      | 83-19 | 22596     | 22837      | M   |                  |     |               |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .37               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
| MSTR                   |              |              | 1.35      |    |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM   | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|-----------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |           |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEPM VIII |    |    | 09   | 83 |           | 100         |                  |     | B2 |    |
| 20  | 22        | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |    | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|----|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT |    |       |                                       |    |
| A           | .78                | 4.85 | 16.34      | 14660             |    | 1     |                                       | B5 |
| R           | 8.92               |      |            |                   |    |       |                                       | B5 |
| D           |                    |      |            |                   |    |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41 | 42    |                                       | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 230.06    | 23432      |     |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .38               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.32      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |    |
|-------------------------|----|----|------|----|----|
| KO                      | PO | SO | UNDR |    |    |
|                         |    |    |      | C4 |    |
| 20                      | 25 | 30 | 35   | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

SEARCH VIA PLY III  
CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
|      | 83-19 | 114.48    | 115.85     | M   |                  |     |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |   |   | 20   | 22 |           |             | 27               | 28  |    | 29 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 | B3 |
|                |    |    |    |    |    |    |    |    |    |    | B4 |

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           |                    |     |            |                   |       |                                       | B5 |
| R           |                    |     |            |                   |       |                                       | B5 |
| D           |                    |     |            |                   |       |                                       | B5 |
| 20          | 21                 | 26  | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           |                   |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
| 5                   |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

SEAM VIII PLY II  
CARD COLUMN:

| PROG | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-19 | 113.86    | 114.48     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID    |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|-------|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |       |
|     |         |   |   |      |    |           |             |                  |     | B2    |
| 20  | 22      |   |   | 27   | 28 | 29 31 33  | 40          | 44               | 48  | 52 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |    | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|----|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT |    |       |                                       |    |
| A           |                    |     |            |                   |    |       |                                       | B5 |
| R           |                    |     |            |                   |    |       |                                       | B5 |
| D           |                    |     |            |                   |    |       |                                       | B5 |
| 20          | 21                 | 26  | 31         | 36                | 41 | 42    |                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           |                   |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
| 2                   |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C3 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

SEAM III PLY

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 112.66    | 113.86     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    |      |    |           |             |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           |                    |     |            |                   |       |                                       | B5 |
| R           |                    |     |            |                   |       |                                       | B5 |
| D           |                    |     |            |                   |       |                                       | B5 |
| 20          | 21                 | 26  | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           |                   |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
| 2 1/2               |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

COORDINATE QUALITY DATA

SEAM III PLY III

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 109.80    | 110.92     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |   |   | 20   | 22 |           |             | 27               | 28  |    | 29 |
|     |         |   |   |      |    |           | 100         |                  |     |    | B2 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           |                    |     |            |                   |       |                                       | B5 |
| R           |                    |     |            |                   |       |                                       | B5 |
| D           |                    |     |            |                   |       |                                       | B5 |
| 20          | 21                 | 26  | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           |                   |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
| 7K                  |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |
|                        |     |       |       |                      |     |       |       |    | C1 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |
|                             |    |    |      |                        |        |    | C2 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |
|                         |     |     |     |     |     |     |    | C3 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |    |
|-------------------------|----|----|------|----|----|
| KO                      | PO | SO | UNDR |    |    |
| 20                      | 25 | 30 | 35   | 40 | 71 |
|                         |    |    |      |    | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

See VII PLY 2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 109.60    | 109.80     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |   |   | 20   | 22 |           |             | 27               | 28  |    | 29 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GH<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           |                    |     |            |                   |       |                                       | B5 |
| R           |                    |     |            |                   |       |                                       | B5 |
| D           |                    |     |            |                   |       |                                       | B5 |
| 20          | 21                 | 26  | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           |                   |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
| 3%                  |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |    |
|-------------------------|----|----|------|----|----|
| KO                      | PO | SO | UNDR |    |    |
|                         |    |    |      | C4 |    |
| 20                      | 25 | 30 | 35   | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

SEAM III PLY I

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 107.52    | 109.40     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |      | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|------|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT. |    |    |
|     |         |    |    | 11   | 83 |           | 100         |                  |      | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48   | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           |                    |     |            |                   |       |                                       | B5 |
| R           |                    |     |            |                   |       |                                       | B5 |
| D           |                    |     |            |                   |       |                                       | B5 |
| 20          | 21                 | 26  | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           |                   |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
| 1/2                 |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNOTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155-1

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-20 | 79.18     | 80.25      | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |
|     | SEAM I  |    |    |      |       |           | 100         |                  |     | B2 |
|     | PLY I   | S  |    | 09   | 83    |           |             |                  |     |    |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44          | 48               | 52  | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 84                 | 28.13 | 16.33      | 10842             | 1     |                                       | B5 |
| R           | 8.56               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 16.5              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.49      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |
|-------------|--------------|---------|-----------------------|----|-------|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |
| A           |              |         |                       |    |       |    | B9 |
| R           |              |         |                       |    |       |    | B9 |
| D           |              |         |                       |    |       |    | B9 |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|----|------|------------------------|--------|----|
| NA                          | K  |    |      | (F)                    | POISES |    |
|                             |    |    |      |                        |        | C2 |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-1

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM II |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY I   | S |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .83                | 13.79 | 18.05      | 12941             | 1     |                                       | B5 |
| R           | 2.18               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-20 | 213.35    | 214.61     | M   |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .65               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.37      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-------|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT   |    |
|     | 26326   | C |   | 11   | 83 |           | 53.74       |                  | 65.07 | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 116                | 445 | 20.05      | 14680             | 1     |                                       | B5 |
| R           |                    |     |            |                   |       |                                       | B5 |
| D           |                    |     |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

20 25 30 35 40 45 50 55 71

| PRODS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|-------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|       |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|       | 83-19 | 10752     | 11525      | M   | 19               | 6   |             | 140 | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 134               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

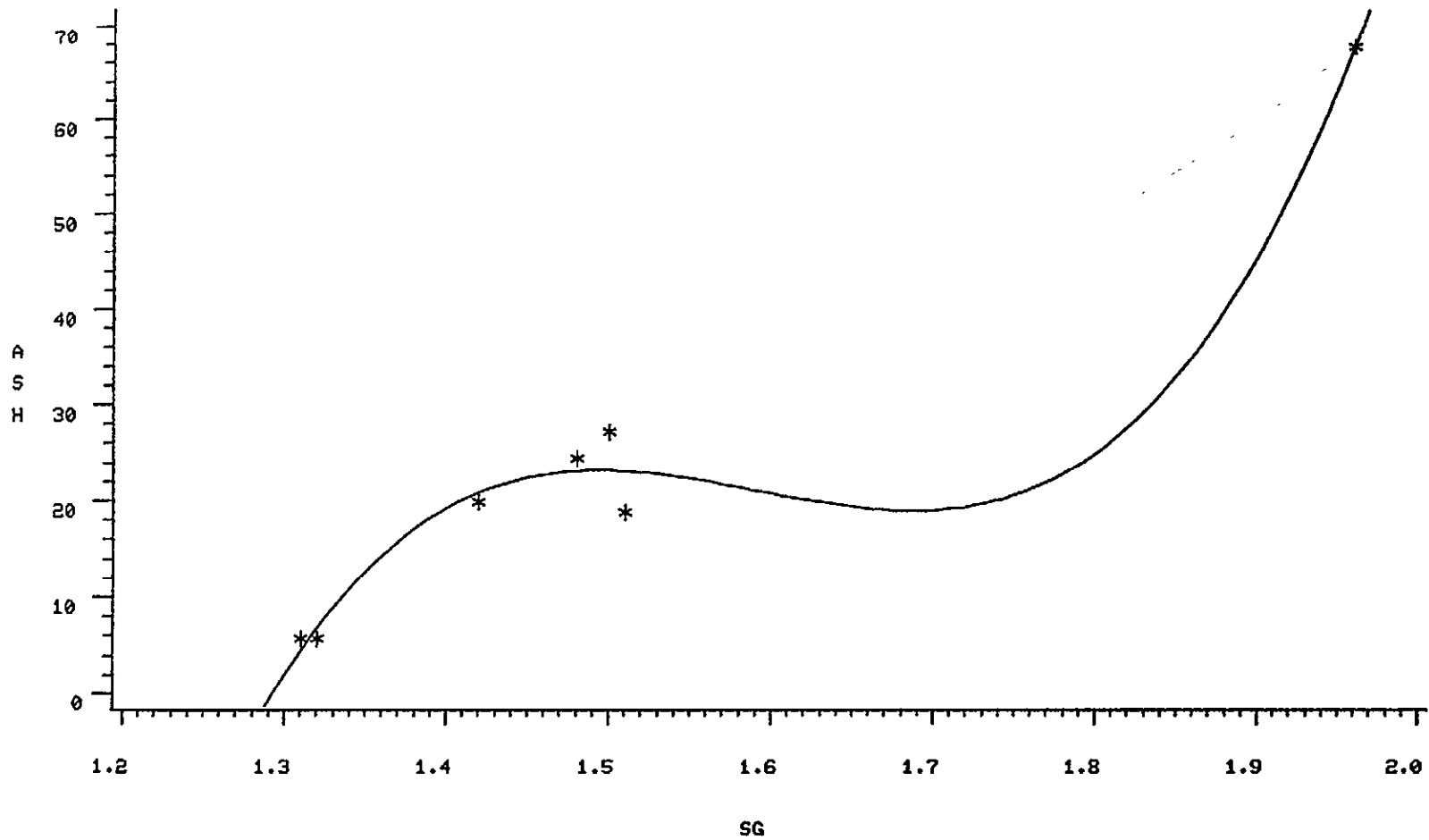
20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      |    |

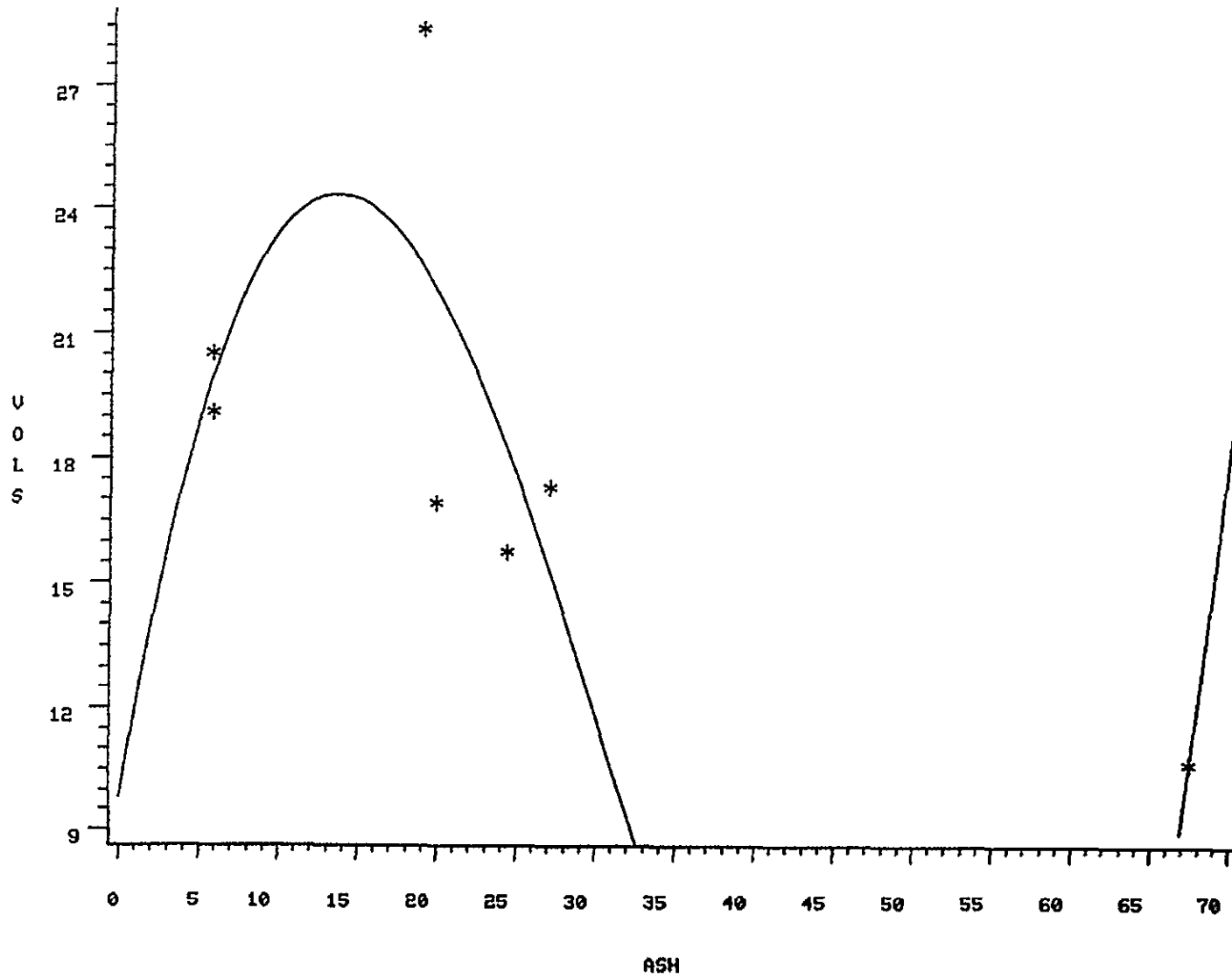
20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# 83-21 BRENDA SEAM SG VS. ASH



# 83-21 BRENDA SEAM ASH VS. V.M



# #25155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
| FAL  | 83-21 | 143.34    | 143.69     | M   |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56, 71

| LAB | LAB NUM | C | T | DATE   |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|--------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M      | YR |           |             | SINK             | FLT |    |
|     |         |   |   | SEAM 1 |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS | PROXIMATE ANALYSIS |       |       |            |                   | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------|--------------------|-------|-------|------------|-------------------|---------------------------------------|----|
|       | A,R,D              | MSTR  | ASH   | VOL MATTER | CALORIFIC CONTENT |                                       |    |
| A     | .81                | 19.87 | 16.92 | 12222      | 1                 |                                       | B5 |
| R     | 1.17               |       |       |            |                   |                                       | B5 |
| D     |                    | 20.03 |       | 12322      |                   |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS | ULTIMATE ANALYSIS |     |     |     |     |      | ID |     |
|-------|-------------------|-----|-----|-----|-----|------|----|-----|
|       | A,R,D             | S % | C % | H % | N % | CL % |    | O % |
| A     |                   | 34  |     |     |     |      |    | B6  |
| R     |                   |     |     |     |     |      |    | B6  |
| D     |                   |     |     |     |     |      |    | B6  |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.42      | B8 |

20 25 30 35 40 45 71

| BASIS | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------|--------------|---------|-----------------------|---|-------|---|----|
|       | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|       |              |         | NA                    | K | NA    | K |    |
| A     |              |         |                       |   |       |   | B9 |
| R     |              |         |                       |   |       |   | B9 |
| D     |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

SEP 10 1963  
EUGENE RECORDS & CO.

# #25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
| PAL  | 83-21 | 145.76    | 146.25     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |       | ID |
|----------------|----|----|----|----|----|----|----|-------|----|
|                |    |    |    |    |    |    |    |       | B3 |
|                |    |    |    |    |    |    |    |       | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .30               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID    |      |
|------------------------|--------------|--------------|-----------|-------|------|
|                        |              |              |           |       | MSTR |
|                        |              |              | 1.48      | B8    |      |
| 20                     | 25           | 30           | 35        | 40 45 | 71   |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |
|     | SEAM I  |    |    | 69   | 83    | BRENDA    | 100         |                  |     | B2 |
|     | PLY II  | S  |    |      |       |           |             |                  |     |    |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44          | 48               | 52  | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .91                | 24.36 | 15.76      | 11466             | 1     |                                       | B5 |
| R           | 2.96               |       |            |                   |       |                                       | B5 |
| D           |                    | 24.58 |            | 11571             |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SiO                     | AlO | TiO | FeO | CaO | MgO | NaO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



# #25155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |       | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|-------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX   |    |
| PAL  | 83-21 | 146.25    | 146.77     | M     |                  |     |             |       | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 45 71 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |       | ID |
|----------------|----|----|----|----|----|----|----|-------|----|
|                |    |    |    |    |    |    |    |       | B3 |
|                |    |    |    |    |    |    |    |       | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 56 | 71 |

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |    |    |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|----|----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |    |    |    |
|     | SEAM I  |   |   | 09   | 83 | BRENDA    | 100         |                  |     | B2 |    |    |    |
|     | PLY III | S |   |      |    |           |             |                  |     |    |    |    |    |
| 20  | 22      |   |   | 27   | 28 | 29        | 31          | 33               | 40  | 44 | 48 | 52 | 71 |

| BASIS | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------|-------------------|-----|-----|-----|------|-----|----|----|
|       | S %               | C % | H % | N % | CL % | O % |    |    |
| A     | .14               |     |     |     |      |     | B6 |    |
| R     | 2.06              |     |     |     |      |     | B6 |    |
| D     |                   |     |     |     |      |     | B6 |    |
| 20    | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| BASIS | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|       | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A     | 144                | 67.53 | 10.67      | 4359              | .1    | B5                                    |    |
| R     | 2.06               |       |            |                   |       | B5                                    |    |
| D     |                    | 68.52 |            | 4423              |       | B5                                    |    |
| 20    | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|-------------|--------------|-----------|----|------|----|
|                        |             |              |           |    | MSTR |    |
|                        |             |              | 1.96      | B8 |      |    |
| 20                     | 25          | 30           | 35        | 40 | 45   | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| BASIS | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------|--------------|---------|-----------------------|----|-------|----|----|----|
|       | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|       |              |         | NA                    | K  | NA    | K  |    |    |
| A     |              |         |                       |    |       |    | B9 |    |
| R     |              |         |                       |    |       |    | B9 |    |
| D     |              |         |                       |    |       |    | B9 |    |
| 20    | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

*Check this!*

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| FAL  | 83-21 | 146.77    | 148.60     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM I  |    |    | 09   | 83 | BRENDAY   | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |  | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|--|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |  |                                       |    |
| A           | .87                | 15.41 | 18.24      | 12965             |  |                                       | B5 |
| R           | 7.54               |       |            |                   |  |                                       | B5 |
| D           |                    | 15.54 | 18.40      | 13079             |  |                                       | B5 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .27               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 42 71  
*daf* 21.78 15485

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 2                   |                    |           |           |          | B7 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.37      | B8 |

20 23 28 33 38 41 71

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 24 28 32 36 40 44 48 52 71

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 45 50 55 71

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

148.50 148.68

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-21 | 146.77    | 148.68     | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| LAB | LAB NUM | C | T | DATE   |        | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|--------|--------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M      | YR     |           |             | SINK             | FLT |    |
|     |         |   |   | SEAM 1 | PLY II |           |             | S                |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |   | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|---|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |   |       |                                       |    |
| A           | .68                | 18.81 | 28.40      | 11289             | 1 |       | B5                                    |    |
| R           | 1.20               |       |            |                   |   |       | B5                                    |    |
| D           |                    | 18.94 | 28.59      | 11366             |   |       | B5                                    |    |

20 21 26 31 35 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
| 2                   |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SiO                     | AlO | TiO | FeO | CaO | MgO | NaO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .21               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILT B MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|---------------|--------------|-----------|----|
|                        |               |              | 6.57      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
| FAL  | 83-21 | 148.68    | 150.32     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM          | C  | T  | DATE |       | UNIT NAME | WT % OF | WT % OF |          | ID |     |
|-----|------------------|----|----|------|-------|-----------|---------|---------|----------|----|-----|
|     |                  |    |    | M    | YR    |           |         | TTL     | SCREENED |    |     |
|     |                  |    |    |      |       |           |         |         | SINK     |    | FLT |
|     | SEAM I<br>PLY II | S  |    | 09   | 83    | BRENDA    | 100     |         |          | B2 |     |
| 20  | 22               | 27 | 28 | 29   | 31 33 | 40        | 44      | 48      | 52       | 71 |     |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .97                | 5.81 | 19.09      | 14493             | 1     |                                          | B5 |
| R           | 1.74               |      |            |                   |       |                                          | B5 |
| D           |                    | 5.87 | 19.28      | 14635             |       |                                          | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .25               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |
| 20                  | 23                 | 28        | 33        | 38       | 41 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.32      | B8 |
| 20                     | 25           | 30           | 35        | 40 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |
|-------------|--------------|---------|-----------------------|----|-------|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |
| A           |              |         |                       |    |       |    | B9 |
| R           |              |         |                       |    |       |    | B9 |
| D           |              |         |                       |    |       |    | B9 |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|----|------|------------------------|--------|----|
|                             |    |      | (F)                    | POISES |    |
| NA                          | K  |      |                        |        | C2 |
| 20                          | 26 | 32   | 37                     | 41     | 45 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |
| 20                      | 25 | 30 | 35    | 40 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

54.75  
100

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| PAL  | 83-21 | 150,32    | 150,85     | M   |                  |     |             |     | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF | WT % OF |          | ID |
|-----|---------|---|---|------|----|-----------|---------|---------|----------|----|
|     |         |   |   | M    | YR |           |         | TTL     | SCREENED |    |
|     |         |   |   |      |    |           |         | SINK    | FLT      |    |
|     | SEAM I  |   |   | 09   | 83 | BRENDA    | 100     |         |          | B2 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

20 22 27 28 29 31 33 40 44 48 52 71

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .91                | 27.05 | 17.29      | 10644             | 1     | B5                                    |    |
| R           | 0.62               |       |            |                   |       | B5                                    |    |
| D           |                    | 27-30 | 17-45      | 10742             |       | B5                                    |    |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 11.9              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 42 71

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.50      | B8 |

20 23 28 33 38 41 71

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 24 28 32 36 40 44 48 52 71

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |
|                         |     |     |     |     |     |     |    |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

20 25 30 35 40 45 50 55 71

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| FAL  | 83-21 | 150.84    | 152.36     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM  | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|----------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |          |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | 83AM1    |    |    |      |    |           |             |                  |     | B2 |    |
|     | PLY VIII | S  |    | 09   | 83 | BRENDA    | 100         |                  |     |    |    |
| 20  | 22       | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1-BTU/LB<br>2-CAL/GM<br>3-KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .91                | 5.70 | 20.53      | 14582             | 1     |                                       | B5 |
| R           | 4.21               |      |            |                   |       |                                       | B5 |
| D           |                    | 5.75 | 20.72      | 14716             |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .30               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.31      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
| FAL  | 83-21 | 152.36    | 152.74     |     |                  |     |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE   |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|--------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M      | YR |           |             | SINK             | FLT |    |
|     |         |   |   | SEAM 1 |    |           |             |                  |     |    |
|     | PLY IX  | S |   |        |    |           |             |                  |     |    |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 22 27 28 29 31 33 40 44 48 52 71

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1-BTU/LB<br>2-CAL/GM<br>3-KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .79                | 10.23 | 23.97      | 13477             | 1     |                                       | B5 |
| R           | 5.62               |       |            |                   |       |                                       | B5 |
| D           |                    | 10.31 | 24.16      | 13584             |       |                                       | B5 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.32              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 45 71  
26.94 d.a.f. 15145 d.a.f.

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.36      | B8 |

20 23 28 33 38 41 71

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 24 28 32 36 40 44 48 52 71

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

20 25 30 35 40 45 50 55 71

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 60.36     | 62.30      |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM#   |   |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .41               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .92                | 3.20 | 19.65      | 14886             | 1     |                                       | B5 |
| R           | 2.97               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES | SOLUBLE COAL ALKALIES |         |       |   | ID |   |    |
|-------------|--------------|-----------------------|---------|-------|---|----|---|----|
|             |              | ACID                  |         | WATER |   |    |   |    |
|             |              | PYRITIC               | SULFATE | NA    | K | NA | K |    |
| A           |              |                       |         |       |   |    |   | B9 |
| R           |              |                       |         |       |   |    |   | B9 |
| D           |              |                       |         |       |   |    |   | B9 |

20 21 26 31 36 41 46 51 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | 62.30     | 62.48      | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM II |    |    | 09   | 83 |           | 100         |                  |     | B2 |    |
|     | PLY II  |    |    |      |    |           |             |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .77                | 25.66 | 30.94      | 9980              | 1     |                                       | B5 |
| R           | 1.68               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .22               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.63      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

CDM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | 62.48     | 62.82      |     |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .92               |     |     |     |      |     | B6 |    |
| R           | 2.39              |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.37      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM II |    |    | 09   | 83 |           | 100         |                  |     | B2 |    |
|     | PLY III | S  |    |      |    |           |             |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .92                | 11.58 | 19.57      | 13524             | 1     | B5                                       |    |
| R           | 2.39               |       |            |                   |       | B5                                       |    |
| D           |                    |       |            |                   |       | B5                                       |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                       | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

## CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 165.47    | 166.40     | M   |                  |     |             |     | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM II |   |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .89                | 8.13 | 18.44      | 14041             | 1     |                                       | B5 |
| R           | 2.44               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .51               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.33      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|----------------------------|---|----|------|------------------------|--------|----|
| NA                         | K |    |      | (F)                    | POISES |    |
|                            |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-2

## CODM QUALITY DATA

166.702

### CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. S. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 166.40    | 166.47     |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| LAB | LAB NUM  | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |          |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SGAM III |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY II   | S |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .62                | 22.30 | 30.78      | 10663             | 1     |                                       | B5 |
| R           | 2.89               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.56              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.58      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-21 | 196.78    | 197.94     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |       | ID |
|----------------|----|----|----|----|----|----|----|-------|----|
|                |    |    |    |    |    |    |    |       | B3 |
|                |    |    |    |    |    |    |    |       | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF | WT % OF |          | ID |     |
|-----|---------|----|----|------|-------|-----------|---------|---------|----------|----|-----|
|     |         |    |    | M    | YR    |           |         | TTL     | SCREENED |    |     |
|     |         |    |    |      |       |           |         |         | SINK     |    | FLT |
|     | SEAM IV |    |    | 09   | 83    |           | 100     |         |          | B2 |     |
|     | PLY I   | S  |    |      |       |           |         |         |          |    |     |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44      | 48      | 52 71    |    |     |

| BASIS | PROXIMATE ANALYSIS |      |       |            |                   | UNITS=1-BTU/LB<br>2-CAL/GM<br>3-KJ/KG | ID |
|-------|--------------------|------|-------|------------|-------------------|---------------------------------------|----|
|       | A,R,D              | MSTR | ASH   | VOL MATTER | CALORIFIC CONTENT |                                       |    |
| A     | .82                | 5.64 | 18.29 | 14.58      | 1                 |                                       | B5 |
| R     | 4.42               |      |       |            |                   |                                       | B5 |
| D     |                    |      |       |            |                   |                                       | B5 |
| 20    | 21                 | 26   | 31    | 36         | 41 42             | 71                                    |    |

| BASIS | ULTIMATE ANALYSIS |     |     |     |       |      | ID |
|-------|-------------------|-----|-----|-----|-------|------|----|
|       | A,R,D             | S % | C % | H % | N %   | CL % |    |
| A     | .36               |     |     |     |       |      | B6 |
| R     |                   |     |     |     |       |      | B6 |
| D     |                   |     |     |     |       |      | B6 |
| 20    | 21                | 26  | 31  | 36  | 41 46 | 51   | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |
| 20                  | 23                 | 28        | 33        | 38 41    | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.32      | B8 |
| 20                     | 25           | 30           | 35 40 45  | 71 |

| BASIS | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |
|-------|--------------|---------|-----------------------|----|-------|----|----|
|       |              |         | ACID                  |    | WATER |    |    |
|       | PYRITIC      | SULFATE | NA                    | K  | NA    | K  |    |
| A     |              |         |                       |    |       |    | B9 |
| R     |              |         |                       |    |       |    | B9 |
| D     |              |         |                       |    |       |    | B9 |
| 20    | 21           | 26      | 31                    | 36 | 41 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|----|------|------------------------|--------|----|
| NA                          | K  |    |      | (F)                    | POISES |    |
|                             |    |    |      |                        |        | C2 |
| 20                          | 26 | 32 | 37   | 41                     | 45 49  | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |       | ID |
|-------------------------|-----|-----|-----|-----|-----|-------|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO   |    |
|                         |     |     |     |     |     |       | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |
| 20                      | 25 | 30 | 35 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S G RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-----------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN       | MAX  |    |
|      | 83-21 | 197.94    | 201.01     | M     |                  |     |           |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41        | 4571 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 1.72              |     |     |     |      |     | B6 |    |
| R           | 1.26              |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|-------------|--------------|-----------|----|------|----|
|                        |             |              |           |    | MSTR |    |
|                        |             |              | 1.39      | B8 |      |    |
| 20                     | 25          | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE    |        | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|---------|--------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M       | YR     |           |             | SINK             | FLT |    |
|     |         |    |    | Seam IV | PLY II |           |             | S                |     |    |
| 20  | 22      | 27 | 28 | 29      | 31 33  | 40        | 44          | 48               | 52  | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.72               | 13.09 | 25.83      | 13109             | 1     | B5                                    |    |
| R           | 1.26               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 198.16    | 200.14     | H   |                  |     |             |     | B1 |

01 04 <sup>12</sup> <sup>19</sup> <sup>26</sup> <sup>27</sup> <sup>32</sup> <sup>37</sup> 41 4571  
 (198.16-198.90, 199.32-199.80, 199.88-200.14)

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 84                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.34      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE    |         | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|---------|---------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M       | YR      |           |             | SINK             | FLT |    |
|     |         |   |   | SEAM IV | PLY III |           |             | S                |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALDRIFIC CONTENT | UNITS |                                       |    |
| A           | 81                 | 10.72 | 22.28      | 13711             | 1     | B5                                    |    |
| R           | 2.66               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
 LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S G RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-----------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN       | MAX |    |
|      | 83-21 | 199.80    | 200.77     | M   |                  |     |           |     | B1 |

01 04 <sup>12</sup> <sup>19</sup> <sup>26</sup> <sup>27</sup> <sup>32</sup> <sup>37</sup> 41 4571  
 (199.80 - 199.88, 200.14 - 200.32, 200.72 - 200.77)

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .24               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.85      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SGRM II |   |   | 09   | 93 |           | 100         |                  |     | B2 |
|     | PLY II  | S |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .99                | 60.28 | 13.01      | 4522              | 1     | B5                                    |    |
| R           | 1.57               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
 LEFT JUSTIFY ALL FIELDS.



# #25155-2

COAL QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 227.97    | 228.36     | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SPAN I  |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY I   | S |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.50              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | 1.76               | 14.05 | 16.49      | 13097             | 1     | B5                                       |    |
| R           | 1.96               |       |            |                   |       | B5                                       |    |
| D           |                    |       |            |                   |       | B5                                       |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K | B9 |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| FUSION TEMPERATURE (F) |     |       |       |                       |     |       |       | ID |
|------------------------|-----|-------|-------|-----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE. |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                  | H=W | H=W/2 | FLUID | C1 |
|                        |     |       |       |                       |     |       |       |    |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

# #25155-2

## CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | 228.36    | 228.48     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM          | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|------------------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |                  |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     |                  |    |    |      |    |           |             |                  |     |    |    |
|     | SEAM V<br>PLY II | S  |    | 09   | 83 |           | 100         |                  |     | B2 |    |
| 20  | 22               | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .50                | 33.13 | 33.83      | 8315              | 1     |                                       | B5 |
| R           | .60                |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .33               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.79      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALD | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | 228.48    | 229.64     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM I  |    |    |      |    |           | 100         |                  |     | B2 |    |
|     | PLY III | S  |    | 09   | 83 |           |             |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .89               |     |     |     |      |     | B6 |    |
| R           | 1.5               |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.89               | 8.09 | 18.89      | 13739             | 1     | B5                                    |    |
| R           | 1.5                |      |            |                   |       | B5                                    |    |
| D           |                    |      |            |                   |       | B5                                    |    |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.36      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |    |
|-----------------------------|----|------|------------------------|--------|----|----|----|
|                             |    |      | (F)                    | POISES |    |    |    |
| NA                          | K  |      |                        |        | C2 |    |    |
| 20                          | 26 | 32   | 37                     | 41     | 45 | 49 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAD |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/H) | BASE (F/H) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | 229.64    | 229.80     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF | WT % OF SCREENED |      | ID |     |
|-----|---------|----|----|------|----|-----------|---------|------------------|------|----|-----|
|     |         |    |    | M    | YR |           |         | TTL              | SINK |    | FLT |
|     | SEAM I  |    |    | 09   | 83 |           | 100     |                  |      | B2 |     |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40      | 44               | 48   | 52 | 71  |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .72                | 22.33 | 30.04      | 10704             | 1     |                                       | B5 |
| R           | .91                |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .31               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.25      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SiO                     | AlO | TiO | FeO | CaO | MgO | NaO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

## CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-21 | 229.80    | 230.02     | M   |                  |     |            |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM | C | T | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|-------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR    |           |             | SINK             | FLT |    |
|     |         |   |   |      | 86AMZ |           |             |                  |     |    |
|     | PLY IV  | S |   |      |       |           | 100         |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .87                | 16.65 | 21.82      | 12651             | 1     |                                       | B5 |
| R           | 2.84               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .38               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.40      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-24 | 232.08    | 232.46     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM II |    |    | 09   | 83 |           | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |    | UNITS<br>1=BTU/LB<br>2=CAL/GH<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|----|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |    |                                          |    |
| A           | .90                | 13.81 | 18.16      | 12.810            | 1  |                                          | B5 |
| R           | 1.68               |       |            |                   |    |                                          | B5 |
| D           |                    |       |            |                   |    |                                          | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41 | 42                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 1.53              |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |    |    |
|------------------------|--------------|--------------|-----------|----|----|----|
|                        |              |              | 1.42      | B8 |    |    |
| 20                     | 25           | 30           | 35        | 40 | 45 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

COMM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | 232.46    | 232.64     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .23               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.61      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |    |
|-------------------------|----|----|------|----|----|
| KO                      | PO | SO | UNDR |    |    |
|                         |    |    |      | C4 |    |
| 20                      | 25 | 30 | 35   | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | 36AM II |    |    | 09   | 87 |           | 100         |                  |     | B2 |    |
|     | PLY II  | 5  |    |      |    |           |             |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .89                | 35.08 | 14.44      | 9442              | 1     | B5                                    |    |
| R           | 1.09               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

COOM QUALITY DATA

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-21 | 232.64    | 233.30     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .31               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.42      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE    |         | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|---------|---------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M       | YR      |           |             | SINK             | FLT |    |
|     |         |    |    | SCAM II | PLY III |           |             | S                |     |    |
| 20  | 22      | 27 | 28 | 29      | 31 33   | 40        | 44          | 48               | 52  | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.03               | 15.90 | 16.47      | 12757             | 1     | B5                                    |    |
| R           | 2.63               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
|      | 83-21 | 233.30    | 233.50     | M   |                  |     |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM II |    |    |      |    |           |             |                  |     |    |    |
|     | PLY IV  | S  |    | 09   | 83 |           | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .84                | 66.06 | 13.28      | 3792              | 1     |                                       | B5 |
| R           | .98                |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .12               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.99      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-21 | 233.50    | 233.90     | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |       | ID |
|----------------|----|----|----|----|----|----|----|-------|----|
|                |    |    |    |    |    |    |    |       | B3 |
|                |    |    |    |    |    |    |    |       | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |         | UNIT NAME | WT % OF | WT % OF |       | ID |     |
|-----|---------|----|----|------|---------|-----------|---------|---------|-------|----|-----|
|     |         |    |    | M    | YR      |           |         | TTL     | SINK  |    | FLT |
|     |         |    |    |      | SEAM VI |           |         |         |       |    | 09  |
|     | PLY I   | S  |    |      |         | 100       |         |         |       |    |     |
| 20  | 22      | 27 | 28 | 29   | 31 33   | 40        | 44      | 48      | 52 71 |    |     |

| BASIS | ULTIMATE ANALYSIS |     |     |     |      |     | ID    |
|-------|-------------------|-----|-----|-----|------|-----|-------|
|       | S %               | C % | H % | N % | CL % | O % |       |
| A,R,D |                   |     |     |     |      |     |       |
| A     | .48               |     |     |     |      |     | B6    |
| R     |                   |     |     |     |      |     | B6    |
| D     |                   |     |     |     |      |     | B6    |
| 20    | 21                | 26  | 31  | 36  | 41   | 46  | 51 71 |

| BASIS | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|       | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A     | .92                | 4.92 | 19.14      | 14817             | 1     |                                       | B5 |
| R     | 1.38               |      |            |                   |       |                                       | B5 |
| D     |                    |      |            |                   |       |                                       | B5 |
| 20    | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |       |
|------------------------|--------------|--------------|-----------|----|-------|
|                        |              |              |           |    | MSTR  |
|                        |              |              | 1.31      |    |       |
|                        |              |              |           | B8 |       |
| 20                     | 25           | 30           | 35        | 40 | 45 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID    |
|---------------------|--------------------|-----------|-----------|----------|-------|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |       |
|                     |                    |           |           |          | B7    |
| 20                  | 23                 | 28        | 33        | 38       | 41 71 |

| BASIS | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID    |
|-------|--------------|---------|-----------------------|----|-------|----|-------|
|       |              |         | ACID                  |    | WATER |    |       |
|       | PYRITIC      | SULFATE | NA                    | K  | NA    | K  |       |
| A     |              |         |                       |    |       |    | B9    |
| R     |              |         |                       |    |       |    | B9    |
| D     |              |         |                       |    |       |    | B9    |
| 20    | 21           | 26      | 31                    | 36 | 41    | 46 | 51 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID    |
|-----------------------------|----|----|------|------------------------|--------|-------|
| NA                          | K  |    |      | (F)                    | POISES |       |
|                             |    |    |      |                        |        |       |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID    |
|-------------------------|----|----|-------|-------|
| KD                      | PO | SO | UNDTR |       |
|                         |    |    |       |       |
| 20                      | 25 | 30 | 35    | 40 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID    |
|-------------------------|-----|-----|-----|-----|-----|-----|-------|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |       |
|                         |     |     |     |     |     |     |       |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | 233.90    | 234.36     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |         | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|---------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR      |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | SBAM II |           |             |                  |     |    | 09 |
|     | PLY II  | S  |    |      |         |           |             |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31      | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .33               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GH<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.17               | 44.08 | 13.59      | 8283              | 1     |                                       | B5 |
| R           | 1.65               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.65      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

425155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
|      | 83-21 | 285.08    | 285.79     | M   |                  |     |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 1.06              |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.39      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM  | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|----------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |          |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM VII |    |    | 09   | 83 |           | 100         |                  |     | B2 |    |
|     | PLY I    | S  |    |      |    |           |             |                  |     |    |    |
| 20  | 22       | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .90                | 16.53 | 17.23      | 12911             | 1     |                                       | B5 |
| R           | 6.57               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 8J-2/ | 285.79    | 286.85     | M   |                  |     |             |     | B1 |

01 04 <sup>12</sup> <sup>19</sup> <sup>26</sup> <sup>27</sup> <sup>32</sup> <sup>37</sup> <sup>41</sup> 4571  
 (285.79 - 286.01, 286.37 - 286.54, 286.66 - 286.85)

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .33               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAY | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.94      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   |     |        | CO | T250 | ASH CRITICAL VISCOSITY |  | ID |
|-----------------------------|---|-----|--------|----|------|------------------------|--|----|
| NA                          | K | (F) | POISES |    |      |                        |  |    |
|                             |   |     |        |    |      |                        |  | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM  | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |          |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM VII |   |   |      |    |           | 100         |                  |     | B2 |
|     | PLY II   | S |   | 09   | 83 |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.56               | 72.12 | 8.20       | 3503              | 1     | B5                                    |    |
| R           | 2.11               |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
 LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 286.01    | 287.17     | M   |                  |     |             |     | B1 |

01 04<sup>12</sup> 19<sup>26</sup> 27<sup>32</sup> 37<sup>41</sup> 4571  
 (.286.01 - 286.37, 286.54 - 286.66, 286.85 - 287.17)

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .75               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.24      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM  | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |          |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SPAM III |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY III  | S |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .76                | 12.27 | 15.85      | 13627             | 1     |                                       | B5 |
| R           | 2.42               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
 LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

# #25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | 304/16    | 305/27     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |            | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|------------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR         |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | SEAM DRILL |           |             |                  |     |    | 09 |
|     | PLY I   | S  |    |      |            |           | 100         |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31         | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS | ULTIMATE ANALYSIS |       |       |        |     |      |     | ID |
|-------|-------------------|-------|-------|--------|-----|------|-----|----|
|       | A,R,D             | S %   | C %   | H %    | N % | CL % | O % |    |
| A     | 1.88              | 21.09 | 14.26 | 120.24 | 1   |      |     | B5 |
| R     | 4.01              |       |       |        |     |      |     | B6 |
| D     |                   |       |       |        |     |      |     | B6 |
| 20    | 21                | 26    | 31    | 36     | 41  | 46   | 51  | 71 |

| BASIS | PROXIMATE ANALYSIS |      |       |            |                   | UNITS | UNITS=1=BTU/LB<br>2=CAL/GH<br>3=KJ/KG | ID |
|-------|--------------------|------|-------|------------|-------------------|-------|---------------------------------------|----|
|       | A,R,D              | MSTR | ASH   | VOL MATTER | CALORIFIC CONTENT |       |                                       |    |
| A     |                    | .88  | 21.09 | 14.26      | 120.24            | 1     | B5                                    |    |
| R     |                    | 4.01 |       |            |                   |       | B5                                    |    |
| D     |                    |      |       |            |                   |       | B5                                    |    |
| 20    | 21                 | 26   | 31    | 36         | 41                | 42    | 71                                    |    |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              | 1.39      | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------|--------------|---------|-----------------------|----|-------|----|----|----|
|       |              |         | ACID                  |    | WATER |    |    |    |
|       | PYRITIC      | SULFATE | NA                    | K  | NA    | K  |    |    |
| A     |              |         |                       |    |       |    | B9 |    |
| R     |              |         |                       |    |       |    | B9 |    |
| D     |              |         |                       |    |       |    | B9 |    |
| 20    | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |    |
|-----------------------------|----|------|------------------------|--------|----|----|----|
|                             |    |      | (F)                    | POISES |    |    |    |
|                             |    |      | NA                     | K      |    |    |    |
| 20                          | 26 | 32   | 37                     | 41     | 45 | 49 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

COOM QUALITY DATA

#25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-21 | 30.5, 27  | 30.5, 70   | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 26.27             |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |                      |       | ID |    |    |    |    |    |
|------------------------|-----|----------------------|-------|----|----|----|----|----|----|
| REDUCING ATMOSPHERE    |     | OXIDIZING ATMOSPHERE |       |    |    |    |    |    |    |
| INIT                   | H=W | H=W/2                | FLUID |    |    |    |    |    |    |
|                        |     |                      |       | C1 |    |    |    |    |    |
| 20                     | 24  | 28                   | 32    | 36 | 40 | 44 | 48 | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     | ID |     |     |     |    |
|-------------------------|-----|-----|-----|----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO |    |     |     |     |    |
|                         |     |     |     |    | CAO | MGO | NAO |    |
|                         |     |     |     | C3 |     |     |     |    |
| 20                      | 25  | 30  | 35  | 40 | 45  | 50  | 55  | 71 |

| MINERAL ANALYSIS OF ASH     |    |      |                            | ID |    |    |        |
|-----------------------------|----|------|----------------------------|----|----|----|--------|
| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY (F) |    |    |    |        |
|                             |    |      |                            |    | NA | K  | POISES |
|                             |    |      |                            | C2 |    |    |        |
| 20                          | 26 | 32   | 37                         | 41 | 45 | 49 | 71     |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM  | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|----------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |          |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SEAM VII |    |    | 09   | 83 |           | 100         |                  |     | B2 |    |
|     | PLY II   | S  |    |      |    |           |             |                  |     |    |    |
| 20  | 22       | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .44                | 60.04 | 19.78      | 3885              | 1     |                                       | B5 |
| R           | 3.17               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |                      |       | ID |    |    |    |    |    |
|------------------------|-----|----------------------|-------|----|----|----|----|----|----|
| REDUCING ATMOSPHERE    |     | OXIDIZING ATMOSPHERE |       |    |    |    |    |    |    |
| INIT                   | H=W | H=W/2                | FLUID |    |    |    |    |    |    |
|                        |     |                      |       | C1 |    |    |    |    |    |
| 20                     | 24  | 28                   | 32    | 36 | 40 | 44 | 48 | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.



#25155-2

CARD COLUMN:

| LAB | LAB NUM  | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|----------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |          |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SRAM III |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY III  | 5 |   |      |    |           |             |                  |     |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .68                | 4.68 | 21.24      | 14748             | 1     |                                       | B5 |
| R           | 1.85               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 306.60    | 307.07     | M   |                  |     |             |     | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.48              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.30      | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

#25155-2

CARD COLUMN:

| LAB | LAB NUM             | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                     |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SPAM VIII<br>PLX IV | S |   | 09   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.47               | 69.23 | 8.24       | 3976              | 1     |                                       | B5 |
| R           | 2.76               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 306.32    | 307.52     | M   |                  |     |             |     | B1 |

01 04 (306.32 - 306.60, 307.07 - 307.52) 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 3.5               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.90      | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

425155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 8j-21 | 48.14     | 48.93      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM          | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|------------------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |                  |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | SEAM IX<br>PLY I | S |   | 09   | 87 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.85               | 9.03 | 14.32      | 14022             | 1     |                                       | B5 |
| R           | 2.78               |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.66              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DOPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 1.35      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | 48.93     | 49.59      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | 83AM 12 |   |   | 09   | 83 |           | 100         |                  |     | B2 |
|     | PLY II  | 5 |   |      |    |           |             |                  |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.48               | 84.50 | 6.78       | 1563              | 1     |                                       | B5 |
| R           | 1.89               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .17               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX ODPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              | 0.28      | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

# #25155-2

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
|      | 83-21 | 49.59     | 50.18      | 11  |                  |     |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | SBAMTR  |    |    | 09   | 83 |           | 100         |                  |     | B2 |    |
|     | PLY III | 5  |    |      |    |           |             |                  |     |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.94               | 10.32 | 22.01      | 13822             | 1     |                                       | B5 |
| R           | 1.39               |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 16.5              |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDFM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HANDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|-------------|--------------|-----------|----|------|----|
|                        |             |              |           |    | MSTR |    |
|                        |             |              | 1.33      | B8 |      |    |
| 20                     | 25          | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

RECONSTITUTE PRODUCT

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
| FAL  | 83-14 | 65.39     | 67.36      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           |                   |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
| 67                     |              |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|----|------|------------------------|--------|----|
|                             |    |      | (F)                    | POISES |    |
| NA                          | K  |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE  |      | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR   |           |             | SINK             | FLT |    |
|     |         |   |   | B1,P3 | 2428 |           |             | C                |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           |                    |     |            |                   |       | B5                                    |    |
| R           |                    |     |            |                   |       | B5                                    |    |
| D           |                    |     |            |                   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           | .03          | .01     |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-14 | 68.39     | 67.36      | M     |                  |     |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

CARD COLUMN:

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTT | WT % OF SCREENED |     | ID    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|-------|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |       |
|     | 2425    | C  |    | 11   | 83    |           | 100         |                  |     | B2    |
| 20  | 22      | 27 | 28 | 29   | 31 33 |           | 40          | 44               | 48  | 52 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .90                | 14.43 | 14.42      |                   |       |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID    |
|-------------|-------------------|-----|-----|-----|------|-----|-------|
|             | S %               | C % | H % | N % | CL % | O % |       |
| A           |                   |     |     |     |      |     | B6    |
| R           |                   |     |     |     |      |     | B6    |
| D           |                   |     |     |     |      |     | B6    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID    |
|-------------|--------------|---------|-----------------------|----|-------|----|-------|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |       |
|             |              |         | NA                    | K  | NA    | K  |       |
| A           |              |         |                       |    |       |    | B9    |
| R           |              |         |                       |    |       |    | B9    |
| D           |              |         |                       |    |       |    | B9    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID    |
|-------------------------|-----|-----|-----|-----|-----|-----|-------|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |       |
|                         |     |     |     |     |     |     | C3    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 71 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |    |
|-------------------------|----|----|------|----|----|
| KO                      | PO | SO | UNDR |    |    |
|                         |    |    |      | C4 |    |
| 20                      | 25 | 30 | 35   | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-14 | 64.39     | 67.36      | M   | 19               | 6   |             | 1.40 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

CARD COLUMN:

| LAB | LAB NUM | C | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |    |
|-----|---------|---|----|------|-------|-----------|-------------|------------------|-----|----|----|----|
|     |         |   |    | M    | YR    |           |             | SINK             | FLT |    |    |    |
|     |         |   |    |      | 25628 |           |             | C                |     |    | 11 | 83 |
| 20  | 22      |   | 27 | 28   | 29    | 31        | 33          | 40               | 44  | 48 | 52 | 71 |

| SAMPLE NUMBERS |  |    |  |    |  |    |  |    | ID |    |  |    |  |    |  |    |  |    |  |    |
|----------------|--|----|--|----|--|----|--|----|----|----|--|----|--|----|--|----|--|----|--|----|
|                |  |    |  |    |  |    |  |    |    | B3 |  |    |  |    |  |    |  |    |  |    |
|                |  |    |  |    |  |    |  |    |    | B4 |  |    |  |    |  |    |  |    |  |    |
| 20             |  | 24 |  | 28 |  | 32 |  | 36 |    | 40 |  | 44 |  | 48 |  | 52 |  | 56 |  | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |    |  |    |  |    |
|-------------|--------------------|------|------------|-------------------|-------|-------|---------------------------------------|----|----|--|----|--|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT |       |       |                                       |    |    |  |    |  |    |
| A           | 1.53               | 6.65 | 15.68      |                   | 14234 | 1     |                                       | B5 |    |  |    |  |    |
| R           |                    |      |            |                   |       |       |                                       | B5 |    |  |    |  |    |
| D           | Das free           |      |            |                   |       | 17-07 |                                       | B5 |    |  |    |  |    |
| 20          | 21                 |      | 26         |                   | 31    |       | 36                                    |    | 41 |  | 42 |  | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |  |    |  |    |  |    |  |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|--|----|--|----|--|----|--|----|
|             | S %               | C % | H % | N % | CL % | O % |    |  |    |  |    |  |    |  |    |
| A           | 161               |     |     |     |      |     | B6 |  |    |  |    |  |    |  |    |
| R           |                   |     |     |     |      |     | B6 |  |    |  |    |  |    |  |    |
| D           |                   |     |     |     |      |     | B6 |  |    |  |    |  |    |  |    |
| 20          | 21                |     | 26  |     | 31   |     | 36 |  | 41 |  | 46 |  | 51 |  | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |  |    |  |    |  |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|--|----|--|----|--|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |  |    |  |    |  |    |
|                     |                    |           |           |          | B7 |    |  |    |  |    |  |    |
| 20                  |                    | 23        |           | 28       |    | 33 |  | 38 |  | 41 |  | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |  |    |  |    |  |    |
|------------------------|--------------|--------------|-----------|----|------|----|--|----|--|----|--|----|
|                        |              |              |           |    | MSTR |    |  |    |  |    |  |    |
|                        |              |              |           | B8 |      |    |  |    |  |    |  |    |
| 20                     |              | 25           |           | 30 |      | 35 |  | 40 |  | 45 |  | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |  |    |  |    |  |    |  |    |
|-------------|--------------|---------|-----------------------|---|-------|---|----|--|----|--|----|--|----|--|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |  |    |  |    |  |    |  |    |
|             |              |         | NA                    | K | NA    | K |    |  |    |  |    |  |    |  |    |
| A           |              |         |                       |   |       |   | B9 |  |    |  |    |  |    |  |    |
| R           |              |         |                       |   |       |   | B9 |  |    |  |    |  |    |  |    |
| D           |              |         |                       |   |       |   | B9 |  |    |  |    |  |    |  |    |
| 20          | 21           |         | 26                    |   | 31    |   | 36 |  | 41 |  | 46 |  | 51 |  | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |  |    |  |    |  |    |  |    |  |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|--|----|--|----|--|----|--|----|--|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |  |    |  |    |  |    |  |    |  |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |  |    |  |    |  |    |  |    |  |    |
|                        |     |       |       |                      |     |       |       | C1 |  |    |  |    |  |    |  |    |  |    |
| 20                     |     | 24    |       | 28                   |     | 32    |       | 36 |  | 40 |  | 44 |  | 48 |  | 52 |  | 71 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |  |    |  |    |  |    |  |    |
|-----------------------------|---|----|------|------------------------|--------|----|--|----|--|----|--|----|--|----|
| NA                          | K |    |      | (F)                    | POISES |    |  |    |  |    |  |    |  |    |
|                             |   |    |      |                        |        | C2 |  |    |  |    |  |    |  |    |
| 20                          |   | 26 |      | 32                     |        | 37 |  | 41 |  | 45 |  | 49 |  | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |  |    |  |    |  |    |  |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|--|----|--|----|--|----|--|----|
| SIO                     | ALO | TIO | FE0 | CA0 | MGO | NAO |    |    |  |    |  |    |  |    |  |    |
|                         |     |     |     |     |     |     | C3 |    |  |    |  |    |  |    |  |    |
| 20                      |     | 25  |     | 30  |     | 35  |    | 40 |  | 45 |  | 50 |  | 55 |  | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |  |    |  |    |  |    |
|-------------------------|----|----|-------|----|--|----|--|----|--|----|
| KO                      | PO | SO | UNDTR |    |  |    |  |    |  |    |
|                         |    |    |       | C4 |  |    |  |    |  |    |
| 20                      |    | 25 |       | 30 |  | 35 |  | 40 |  | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 83-14 | 65739     | 67.36      | M   | 19               | 6   | 1.40        | 1.60 | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 52                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 26 32 37 41 45 49 71

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|------|------------------------|--------|----|
|                             |    |      | (F)                    | POISES |    |
| NA                          | K  |      |                        |        | C2 |

20 25 30 35 40 71

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25524 | C  |           |             |                  | 11  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |  | UNITS | ID |
|-------------|--------------------|-------|------------|-------------------|--|-------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |  |       |    |
| A           | .99                | 20.57 | 14.08      | 11894             |  | 1     | B5 |
| R           |                    |       |            |                   |  |       | B5 |
| D           |                    |       |            |                   |  |       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-14 | 6539      | 6736       | M   | 19               | 6   | 1.60        | 1.80 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |      | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR   |           |             | SINK             | FLT |    |
|     |         |   |   |      | 2425 |           |             | C                |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.13               | 36.61 | 17.93      | 8686              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 57                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |      |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 8314 | 65.39     | 67.36      | M   | 19               | 6   | 1.80        |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 47                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|------|------------------------|--------|----|
|                             |    |      | (F)                    | POISES |    |
| NA                          | K  |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | 2524    | C |   | 11   | 83 |           | 57.77       | 4.17             |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | 164                | 67.89 | 10.58      | 3601              | 1     |                                          | B5 |
| R           |                    |       |            |                   |       |                                          | B5 |
| D           |                    |       |            |                   |       |                                          | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CDM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 83-14 | 65.39     | 67.36      | M   | 6                | 0.5 |             | 1.40 | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .68               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|------|------------------------|--------|----|
|                             |    |      | (F)                    | POISES |    |
| NA                          | K  |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-------|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT   |    |
|     | 2828    | C |   | 11   | 83 |           | 33.37       |                  | 66.08 | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | 1.13               | 3.80 | 14.79      | 14689             | 1     |                                          | B5 |
| R           |                    |      |            |                   |       |                                          | B5 |
| D           |                    |      |            |                   |       |                                          | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-14 | 65.39     | 67.36      | M   | 6                | 0.5 | 1.40        | 1.60 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 59                |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |    |
|-----------------------------|----|------|------------------------|--------|----|----|----|
|                             |    |      | (F)                    | POISES |    |    |    |
| NA                          | K  |      |                        |        | C2 |    |    |
| 20                          | 26 | 32   | 37                     | 41     | 45 | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |    |
|-------------------------|----|----|------|----|----|
| KO                      | PO | SO | UNDR |    |    |
|                         |    |    |      | C4 |    |
| 20                      | 25 | 30 | 35   | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE |      | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR   |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 2525 |           |             | C                |     |    | 11 |
| 20  | 22      | 27 | 28 | 29   | 31   | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1-BTU/LB<br>2-CAL/GM<br>3-KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.89               | 21.38 | 13.58      | 11.25             |       |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX  |      |
|      | 83-14 | 65.39     | 67.36      | M   | 6                | 0.5 | 1.60       | 1.80 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41   | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 161               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|-------------|--------------|-----------|----|------|----|
|                        |             |              |           |    | MSTR |    |
|                        |             |              |           | B8 |      |    |
| 20                     | 25          | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|-------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M     | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    | 28225 | C  |           |             |                  | 11  |    | 83 |
| 20  | 22      | 27 | 28 | 29    | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |    | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|----|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT |    |       |                                       |    |
| A           | 1.43               | 4.34 | 13.59      | 8221              |    | 1     | B5                                    |    |
| R           |                    |      |            |                   |    |       | B5                                    |    |
| D           |                    |      |            |                   |    |       | B5                                    |    |
| 20          | 21                 | 26   | 31         | 36                | 41 | 42    | 71                                    |    |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |    |
|      | 83-14 | 65.39     | 67.36      | M   | 6                | 0.5 | 1.80       |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.52              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     | ID |
|-------------------------|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO |    |
| CAO                     | MGO | NAO |     |    |
|                         |     |     |     | C3 |

20 25 30 35 40 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 24528 | C  |           |             |                  | 11  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.13               | 67.91 | 10.12      | 3644              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-14 | 65.79     | 67.36      | M   | 0.5              | 0.0 |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | 2824    | C  |    | 11   | 83 |           | 8.86        |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GH<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .79                | 19.04 | 15.14      | 12.06             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .68               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |    |    |
|------------------------|-------------|--------------|-----------|----|----|----|
| MSTR                   |             |              |           | B8 |    |    |
| 20                     | 25          | 30           | 35        | 40 | 45 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

RECONSTITUTE PRODUCT

CARD COLUMN:

| PROS | HOLE | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |      |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 8314 | 65.79     | 67.36      | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |       |      |     |      |       | ID |
|-------------|-------------------|-------|------|-----|------|-------|----|
|             | S %               | C %   | H %  | N % | CL % | O %   |    |
| A           | .64               | 71.66 | 3.85 | .95 |      | 12.98 | B6 |
| R           |                   |       |      |     |      |       | B6 |
| D           |                   |       |      |     |      |       | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        | 2            | 2.3          |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |      |      |       | ID |
|-------------------------|------|------|-------|----|
| KO                      | PO   | SO   | UNDR  |    |
| .90                     | 1.72 | 1.02 | -2.42 | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | 26325   | C |   | 11   | 83 |           |             |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .73                | 9.19 |            |                   |       |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 1                   |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |      |       |       |                      |      |       |       | ID |
|------------------------|------|-------|-------|----------------------|------|-------|-------|----|
| REDUCING ATMOSPHERE    |      |       |       | OXIDIZING ATMOSPHERE |      |       |       |    |
| INIT                   | H=W  | H=W/2 | FLUID | INIT                 | H=W  | H=W/2 | FLUID |    |
| 2104                   | 2224 | 2398  | 2483  | 2418                 | 2513 | 2547  | 2618  | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |       |      |       |      |      |      | ID |
|-------------------------|-------|------|-------|------|------|------|----|
| SIO                     | ALO   | TIO  | FEO   | CAO  | MGD  | NAD  |    |
| 59.76                   | 17.57 | 1.61 | 12.30 | 2.41 | 1.60 | 1.75 | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

RECONSTITUTE PRODUCT

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-17 | 107.36    | 113.46     | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |       |      |      |      |       | ID |
|-------------|-------------------|-------|------|------|------|-------|----|
|             | S %               | C %   | H %  | N %  | CL % | O %   |    |
| A           | .28               | 77.54 | 4.35 | 1.23 |      | 10.89 | B6 |
| R           |                   |       |      |      |      |       | B6 |
| D           |                   |       |      |      |      |       | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
| 79                     | 2.2          |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |      |      |       | ID |
|-------------------------|------|------|-------|----|
| KO                      | PO   | SO   | UNDTR |    |
| 1.48                    | 2.16 | 4.86 | 2.29  | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25404 | C  |           |             |                  | 11  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |  | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|--|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT |  |       |                                       |    |
| A           | 1.01               | 4.70 |            |                   |  |       | B5                                    |    |
| R           |                    |      |            |                   |  |       | B5                                    |    |
| D           |                    |      |            |                   |  |       | B5                                    |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
| 1 1/2               |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           | .01          | TR      |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |      |       |       |                      |      |       |       | ID |
|------------------------|------|-------|-------|----------------------|------|-------|-------|----|
| REDUCING ATMOSPHERE    |      |       |       | OXIDIZING ATMOSPHERE |      |       |       |    |
| INIT                   | H=W  | H=W/2 | FLUID | INIT                 | H=W  | H=W/2 | FLUID |    |
| 2443                   | 2468 | 2483  | 12650 | 2473                 | 2483 | 2528  | 12650 | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |       |      |      |      |      |      | ID |
|-------------------------|-------|------|------|------|------|------|----|
| SIO                     | ALO   | TIO  | FEO  | CAO  | MGO  | NAO  |    |
| 49.49                   | 27.07 | 1.05 | 2.24 | 6.26 | 1.74 | 2.37 | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 88-17 | 107.36    | 113.46     | M   | 19               | 6   |             | 1.40 | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .27               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25404 | e  |           |             |                  | 10  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .70                | 4.05 | 20.93      | 14732             | 1     |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FED | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX  |      |
|      | 83-17 | 107.36    | 113.46     | M   | 19               | 6   | 1.40       | 1.60 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41   | 4571 |

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|-------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR    |           |             | SINK             | FLT |    |
|     |         |   |   |      | 28404 |           |             | C                |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |  | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|--|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |  |       |                                       |    |
| A           | .65                | 19.60 | 20.83      | 11586             |  | 1     |                                       | B5 |
| R           |                    |       |            |                   |  |       |                                       | B5 |
| D           |                    |       |            |                   |  |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .18               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |      | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|------|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT  |    |
|     | 28604   | C |   | 10   | 83 |           | 55.69       |                  | 0.12 | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.06               | 47.28 | 16.80      | 7036              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SiO                     | AlO | TiO | FeO | CaO | MgO | NaO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

| PROS | HOLE | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |      |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 8377 | 107.36    | 113.46     | M   | 19               | 6   | 1.60        | 1.80 | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .08               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

COMM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-17 | 107.36    | 113.46     | M   | 19               | 6   | 1.80        |     | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25404 | C  |           |             |                  | 10  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |   | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|---|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |   |       |                                       |    |
| A           | .45                | 65.66 | 15.01      | 2726              | 1 |       | B5                                    |    |
| R           |                    |       |            |                   |   |       | B5                                    |    |
| D           |                    |       |            |                   |   |       | B5                                    |    |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .07               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES | SOLUBLE COAL ALKALIES |    |       |    | ID |
|-------------|--------------|-----------------------|----|-------|----|----|
|             |              | ACID                  |    | WATER |    |    |
|             | PYRITIC      | SULFATE               | NA | K     | NA |    |
| A           |              |                       |    |       |    | B9 |
| R           |              |                       |    |       |    | B9 |
| D           |              |                       |    |       |    | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGD | NAQ |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |      |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 8377 | 10736     | 11346      | M   | 6                | 0.5 |             | 140 | B1   |
| 01   | 04   | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 29                |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |    |
|-------------------------|----|----|------|----|----|
| KO                      | PO | SO | UNDR |    |    |
|                         |    |    |      | C4 |    |
| 20                      | 25 | 30 | 35   | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-------|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT   |    |    |
|     | 25404   | e  |    | 10   | 83 |           | 35.89       |                  | 92.84 | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48    | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | 1.29               | 3.20 | 20.42      | 14874             | 1     |                                          | B5 |
| R           |                    |      |            |                   |       |                                          | B5 |
| D           |                    | 3.24 | 20.68      | 15068             |       |                                          | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                       | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-17 | 107.36    | 112.46     | M     | 6                | 0.5 | 1.40        | 1.60 | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF | WT % OF |       | ID |     |
|-----|---------|----|----|------|-------|-----------|---------|---------|-------|----|-----|
|     |         |    |    | M    | YR    |           |         | TTL     | SINK  |    | FLT |
|     |         |    |    |      | 25404 |           |         | C       |       |    | 10  |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44      | 48      | 52 71 |    |     |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.44               | 17.64 | 19.79      | 12126             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID    |
|-------------|-------------------|-----|-----|-----|------|-----|-------|
|             | S %               | C % | H % | N % | CL % | O % |       |
| A           | .22               |     |     |     |      |     | B6    |
| R           |                   |     |     |     |      |     | B6    |
| D           |                   |     |     |     |      |     | B6    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID    |
|---------------------|--------------------|-----------|-----------|----------|-------|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |       |
|                     |                    |           |           |          | B7    |
| 20                  | 23                 | 28        | 33        | 38       | 41 71 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |       |
|------------------------|-------------|--------------|-----------|----|-------|
|                        |             |              |           |    | MSTR  |
|                        |             |              |           | B8 |       |
| 20                     | 25          | 30           | 35        | 40 | 45 71 |

| BASIS A,R,D | SULFUR TYPES | SOLUBLE COAL ALKALIES |    |       |    | ID |       |
|-------------|--------------|-----------------------|----|-------|----|----|-------|
|             |              | ACID                  |    | WATER |    |    |       |
|             | PYRITIC      | SULFATE               | NA | K     | NA |    | K     |
| A           |              |                       |    |       |    | B9 |       |
| R           |              |                       |    |       |    | B9 |       |
| D           |              |                       |    |       |    | B9 |       |
| 20          | 21           | 26                    | 31 | 36    | 41 | 46 | 51 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID    |
|-----------------------------|----|----|------|------------------------|--------|-------|
| NA                          | K  |    |      | (F)                    | POISES |       |
|                             |    |    |      |                        |        | C2    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID    |
|-------------------------|-----|-----|-----|-----|-----|-----|-------|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |       |
|                         |     |     |     |     |     |     |       |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID    |
|-------------------------|----|----|-------|-------|
| KO                      | PO | SO | UNDTR |       |
|                         |    |    |       |       |
| 20                      | 25 | 30 | 35    | 40 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-17 | 107.36    | 113.46     | M   | 6                | 0.5 | 1.60        | 1.80 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| LAB | LAB NUM | C | T  | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |    |
|-----|---------|---|----|-------|----|-----------|-------------|------------------|-----|----|----|----|
|     |         |   |    | M     | YR |           |             | SINK             | FLT |    |    |    |
|     |         |   |    | 25404 | C  |           |             |                  | 10  |    | 83 |    |
| 20  | 22      |   | 27 | 28    | 29 | 31        | 33          | 40               | 44  | 48 | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.48               | 36.13 | 18.38      | 8736              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .16               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-17 | 107.36    | 113.46     | M   | 6                | 0.5 | 1.80        |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 10.8              |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 25404 |           |             | C                |     |    | 10 |
| 20  | 22      | 27 | 28 | 29   | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1-BTU/LB<br>2-CAL/GM<br>3-KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 13.6               | 65.80 | 15.40      | 2902              | 1     | B5                                    |    |
| R           |                    |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-17 | 107.36    | 113.46     | M     | 0.5              | 0   |             |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE  |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|-------|-------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M     | YR    |           |             | SINK             | FLT |    |
|     |         |    |    | 25404 | C     |           |             |                  | 10  |    |
| 20  | 22      | 27 | 28 | 29    | 31 33 | 40        | 44          | 48               | 52  | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .98                | 5.84 | 21.40      | 14267             | 1     |                                          | B5 |
| R           |                    |      |            |                   |       |                                          | B5 |
| D           |                    |      |            |                   |       |                                          | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .28               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|-------------|--------------|-----------|----|------|----|
|                        |             |              |           |    | MSTR |    |
|                        |             |              |           | B8 |      |    |
| 20                     | 25          | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CDM QUALITY DATA

RECONSTITUTE PRODUCT

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | 25404   | C |   | 11   | 83 |           |             |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 34                 | 6.97 |            |                   |       |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
| 7 1/2               |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           | .01          | TR      |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |       |       |       |                      |       |       |       | ID |
|------------------------|-------|-------|-------|----------------------|-------|-------|-------|----|
| REDUCING ATMOSPHERE    |       |       |       | OXIDIZING ATMOSPHERE |       |       |       |    |
| INIT                   | H=W   | H=W/2 | FLUID | INIT                 | H=W   | H=W/2 | FLUID |    |
| +2650                  | +2650 | +2650 | +2650 | +2650                | +2650 | +2650 | +2650 | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |       |      |      |      |     |      | ID |
|-------------------------|-------|------|------|------|-----|------|----|
| SIO                     | ALO   | TIO  | FEO  | CAO  | NGO | NAO  |    |
| 65.19                   | 24.05 | 1.57 | 1.25 | 1.08 | .60 | 1.57 | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-18 | PLY VII   |            |     |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 45 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |       |      |      |      |       | ID |
|-------------|-------------------|-------|------|------|------|-------|----|
|             | S %               | C %   | H %  | N %  | CL % | O %   |    |
| A           | 37                | 76.11 | 3.74 | 1.22 |      | 10.75 | B6 |
| R           |                   |       |      |      |      |       | B6 |
| D           |                   |       |      |      |      |       | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
| 83                     | 1.8          |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |      |      |      | ID |
|-------------------------|------|------|------|----|
| KO                      | PO   | SO   | UNDR |    |
| 1.00                    | 1.29 | 1.84 | 1.56 | C4 |

20 25 30 35 40 71

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-18 | PLY       |            | M   | 19               | 6   |             | 1.40 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 25404 |           |             | e                |     |    | 10 |
| 20  | 22      | 27 | 28 | 29   | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .57                | 3.62 | 23.10      | 14999             | 1     |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .37               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M)          | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|--------------------|------------|-----|------------------|-----|-------------|------|------|
|      |       |                    |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-18 | PLY <del>214</del> |            | M   | 19               | 6   | 1.40        | 1.60 | B1   |
| 01   | 04    | 12                 | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .29               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 25404 |           |             | C                |     |    | 10 |
| 20  | 22      | 27 | 28 | 29   | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .63                | 25.32 | 18.43      | 11270             | 1     | B5                                    |    |
| R           |                    |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 83-18 | PLY 811   |            | M   | 19               | 6   | 1.60        | 1.80 | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |      | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|------|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT  |    |
|     | 25404   | C |   | 10   | 83 |           | 41.14       |                  | 5.11 | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .77                | 39.14 | 17.78      | 8908              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .30               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-18 | PLY VII   |            | M     | 19               | 6   | 1.80        |      | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .05               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |    |
|-----------------------------|----|------|------------------------|--------|----|----|----|
|                             |    |      | (F)                    | POISES |    |    |    |
| NA                          | K  |      |                        |        | C2 |    |    |
| 20                          | 26 | 32   | 37                     | 41     | 45 | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|-------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M     | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    | 28404 | C  |           |             |                  | 10  |    | 83 |
| 20  | 22      | 27 | 28 | 29    | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .89                | 72.91 | 15.08      | 2864              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-18 | PLY XIV   |            | M   | 6                | 0.5 |             | 1.40 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-------|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT   |    |    |
|     |         |    |    |      |    |           |             |                  |       |    |    |
|     | 25404   | C  |    | 10   | 83 |           | 43.24       |                  | 85.94 | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48    | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | 165                | 2.92 | 24.99      | 15103             | 1     |                                          | B5 |
| R           |                    |      |            |                   |       |                                          | B5 |
| D           |                    | 2.94 | 25-15      | 15202             |       |                                          | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 39                |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-18 | PLY III   |            | M   | 6                | 0.5 | 1.40        | 1.60 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

CARD COLUMN:

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 25404 |           |             | C                |     |    | 10 |
| 20  | 22      | 27 | 28 | 29   | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .26               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .75                | 25.92 | 18.93      | 11266             | 1     | B5                                    |    |
| R           |                    |       |            |                   |       | B5                                    |    |
| D           |                    |       |            |                   |       | B5                                    |    |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| BASIS A,R,D | SULFUR TYPES | SOLUBLE COAL ALKALIES |    |       |    | ID |    |    |
|-------------|--------------|-----------------------|----|-------|----|----|----|----|
|             |              | ACID                  |    | WATER |    |    |    |    |
|             | PYRITIC      | SULFATE               | NA | K     | NA |    | K  |    |
| A           |              |                       |    |       |    | B9 |    |    |
| R           |              |                       |    |       |    | B9 |    |    |
| D           |              |                       |    |       |    | B9 |    |    |
| 20          | 21           | 26                    | 31 | 36    | 41 | 46 | 51 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MSO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

COMM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M)          | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. S. RANGE |      | ID   |
|------|-------|--------------------|------------|-----|------------------|-----|-------------|------|------|
|      |       |                    |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-18 | PLY <del>XXX</del> |            | M   | 6                | 0.5 | 1.60        | 1.80 | B1   |
| 01   | 04    | 12                 | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 12.6              |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |    |
|-----------------------------|----|------|------------------------|--------|----|----|----|
|                             |    |      | (F)                    | POISES |    |    |    |
| NA                          | K  |      |                        |        | C2 |    |    |
| 20                          | 26 | 32   | 37                     | 41     | 45 | 49 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |    |
|-------------------------|----|----|------|----|----|
| KO                      | PO | SO | UNDR |    |    |
|                         |    |    |      | C4 |    |
| 20                      | 25 | 30 | 35   | 40 | 71 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 25404 |           |             | C                |     |    | 10 |
| 20  | 22      | 27 | 28 | 29   | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1-BTU/LB<br>2-CAL/GM<br>3-KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.02               | 44.11 | 17.01      | 799.5             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             |              |         | ACID                  |    | WATER |    |    |    |
|             | PYRITIC      | SULFATE | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-18 | PLY XIV   |            | M   | 6                | 0.5 | 1.80        |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

CARD COLUMN:

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | 25404   | C  |    | 10   | 83 |           | 43.4        | 3.25             |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .10               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .86                | 72.02 | 12.04      | 2890              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |
|      | 83-18 | PLY XIV   |            |     |                  | 0.5 | 0           |     | B1   |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 13.5              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |
|                        |              |              |           |    |      | B8 |

| ASH ALKALIDES WATER SOLUBLE | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |    |
|-----------------------------|----|------|------------------------|--------|----|----|----|
|                             |    |      | (F)                    | POISES |    |    |    |
| 20                          | 26 | 32   | 37                     | 41     | 45 | 49 | 71 |
|                             |    |      |                        |        |    |    | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR | ID |    |
| 20                      | 25 | 30 | 35    |    | 40 |
|                         |    |    |       |    | C4 |

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25404 | C  |           |             |                  | 10  |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .64                | 11.88 | 22.05      | 13258             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |
|                     |                    |           |           |          |    | B7 |

| BASIS A,R,D | SULFUR TYPES | SOLUBLE COAL ALKALIES |    |       |    | ID |
|-------------|--------------|-----------------------|----|-------|----|----|
|             |              | ACID                  |    | WATER |    |    |
|             | PYRITIC      | SULFATE               | NA | K     | NA |    |
| A           |              |                       |    |       |    | B9 |
| R           |              |                       |    |       |    | B9 |
| D           |              |                       |    |       |    | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |
|                        |     |       |       |                      |     |       |       |    | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO | ID |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  |    | 55 |
|                         |     |     |     |     |     |     |    | C3 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

RECONSTITUTE PRODUCT

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
| FAL  | 83-19 | 107.52    | 115.85     | M   |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C | T | DATE |      | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR   |           |             | SINK             | FLT |    |
|     |         |   |   | 5758 | 2628 |           |             | C                |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |     |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-----|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           |                    |     |            |                   |       |                                          | B5 |
| R           |                    |     |            |                   |       |                                          | B5 |
| D           |                    |     |            |                   |       |                                          | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           |                   |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
| 72                     |              |              |           | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           | .0/          | .0/     |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

Vols 25.16 d.a.f.

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-19 | 107.52    | 115.85     | M   |                  |     |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           |                   |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 2518 | C  |           |             |                  | 11  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS 63.98 |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR                     | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .77                      | 13.74 | 21.51      |                   |       |                                       | B5 |
| R           |                          |       |            |                   |       |                                       | B5 |
| D           |                          | 13.84 | 21.68      |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CDOM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-------|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT   |    |
|     | 28528   | C |   | 11   | 80 |           | 53.74       |                  | 65.07 | B2 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.16               | 4.48 | 20.08      | 14680             | 1     |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 83-19 | 107.52    | 115.88     | M   | 19               | 6   |             | 1.40 | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 1.34              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-------|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT   |    |
|     | 25528   | C |   | 11   | 83 |           | 53.74       |                  | 12.68 | B2 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.12               | 22.88 | 19.72      | 11219             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 83-19 | 107.52    | 115.88     | M   | 19               | 6   | 1.40        | 1.60 | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .28               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      |    |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-19 | 107.52    | 115.85     | M   | 19               | 6   | 1.60        | 1.80 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-------|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT   |    |    |
|     | 2528    | c  |    | 11   | 83 |           | 53.74       |                  | 12.11 | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48    | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |    | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|----|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |    |       |                                       |    |
| A           | 110                | 34.34 | 22.91      | 8828              |    | 1     |                                       | B5 |
| R           |                    |       |            |                   |    |       |                                       | B5 |
| D           |                    |       |            |                   |    |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41 | 42    |                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 12.2              |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CDM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-19 | 107.52    | 115.88     | M   | 19               | 6   | 1.80        |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |      | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR   |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 2525 |           |             | C                |     |    | 11 |
| 20  | 22      | 27 | 28 | 29   | 31   | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |    | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|----|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |    |       |                                       |    |
| A           | 1.59               | 68.92 | 12.83      | 32.57             |    | 1     |                                       | B5 |
| R           |                    |       |            |                   |    |       |                                       | B5 |
| D           |                    |       |            |                   |    |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41 | 42    |                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .11               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-19 | 107.52    | 115.85     | M   | 6                | 0.5 |             | 1.40 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| LAB | LAB NUM | C | T  | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |    |
|-----|---------|---|----|-------|----|-----------|-------------|------------------|-----|----|----|----|
|     |         |   |    | M     | YR |           |             | SINK             | FLT |    |    |    |
|     |         |   |    | 28825 | C  |           |             |                  | 11  |    | 83 |    |
| 20  | 22      |   | 27 | 28    | 29 | 31        | 33          | 40               | 44  | 48 | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.04               | 3.16 | 21.14      | 14870             | 1     |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .39               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 83-19 | 107.82    | 115.84     | M     | 6                | 0.5 | 1.40        | 1.60 | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |
|     |         |    |    |      | 2528  |           |             | C                |     |    |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44          | 48               | 52  | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.37               | 23.47 | 18.14      | 10294             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 2.8               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |
|-------------|--------------|---------|-----------------------|----|-------|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |
| A           |              |         |                       |    |       |    | B9 |
| R           |              |         |                       |    |       |    | B9 |
| D           |              |         |                       |    |       |    | B9 |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|----|----|------|------------------------|--------|----|
| NA                          | K  |    |      | (F)                    | POISES |    |
|                             |    |    |      |                        |        | C2 |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |
| 20                      | 25 | 30 | 35    | 40 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |      |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 8319 | 107.52    | 115.85     | M     | 6                | 0.5 | 1.60        | 1.80 | B1 |
| 01   | 04   | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |
|     |         |    |    | 2828 | C     |           |             |                  | 11  |    |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44          | 48               | 52  | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 115                | 34.84 | 22.76      | 8853              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 20                |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDFM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |       | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|-------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX   |    |
|      | 83-19 | 107.52    | 115.85     | M     | 6                | 0.5 | 1.80        |       | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 45 71 |    |

| LAB | LAB NUM | C     | T        | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|-------|----------|------|----|-----------|-------------|------------------|-----|----|
|     |         |       |          | M    | YR |           |             | SINK             | FLT |    |
|     | 28224   | C     |          | 11   | 83 |           | 35.64       | 7.78             |     | B2 |
| 20  | 22      | 27 28 | 29 31 33 | 40   | 44 | 48        | 52          | 71               |     |    |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |       | ID |
|----------------|----|----|----|----|----|----|----|-------|----|
|                |    |    |    |    |    |    |    |       | B3 |
|                |    |    |    |    |    |    |    |       | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.52               | 65.07 | 17.75      | 3515              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    |       |            |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |       | ID |
|-------------|-------------------|-----|-----|-----|------|-------|----|
|             | S %               | C % | H % | N % | CL % | O %   |    |
| A           | 12                |     |     |     |      |       | B6 |
| R           |                   |     |     |     |      |       | B6 |
| D           |                   |     |     |     |      |       | B6 |
| 20          | 21                | 26  | 31  | 36  | 41   | 46 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID    |      |
|------------------------|--------------|--------------|-----------|-------|------|
|                        |              |              |           |       | MSTR |
|                        |              |              |           | B8    |      |
| 20                     | 25           | 30           | 35        | 40 45 | 71   |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |       | ID |
|-------------|--------------|---------|-----------------------|----|-------|-------|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |       |    |
|             |              |         | NA                    | K  | NA    | K     |    |
| A           |              |         |                       |    |       |       | B9 |
| R           |              |         |                       |    |       |       | B9 |
| D           |              |         |                       |    |       |       | B9 |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |          | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|----------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |          |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID    |    |
|                        |     |       |       |                      |     |       |          | C1 |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48 52 71 |    |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|----|----|------|------------------------|--------|----|
| NA                          | K  |    |      | (F)                    | POISES |    |
|                             |    |    |      |                        |        | C2 |
| 20                          | 26 | 32 | 37   | 41                     | 45 49  | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |       | ID |
|-------------------------|-----|-----|-----|-----|-----|-------|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO   |    |
|                         |     |     |     |     |     |       | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
|      | 83-19 | 107.52    | 115.85     | M   | 0.5              | 0   |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |      | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR   |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 2528 |           |             | C                |     |    | 11 |
| 20  | 22      | 27 | 28 | 29   | 31   | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.00               | 9.08 | 23.07      | 13751             | 1     |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 134               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

RECONSTITUTE PRODUCT

CARD COLUMN:

| PROS | HOLE | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|------|-----------|------------|-------|------------------|-----|-------------|------|----|
|      |      |           |            |       | MAX              | MIN | MIN         | MAX  |    |
|      | 8319 | 107.52    | 115.85     | M     | 6                |     |             |      | B1 |
| 01   | 04   | 12        | 19         | 26 27 | 32               | 37  | 41          | 4571 |    |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |
|     | 25825   | C  |    | 11   | 83    |           |             |                  |     | B2 |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44          | 48               | 52  | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .69                | 7.02 |            |                   |       |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |       |      |      |      |       | ID |    |
|-------------|-------------------|-------|------|------|------|-------|----|----|
|             | S %               | C %   | H %  | N %  | CL % | O %   |    |    |
| A           | .35               | 74.49 | 4.52 | 1.07 |      | 11.86 | B6 |    |
| R           |                   |       |      |      |      |       | B6 |    |
| D           |                   |       |      |      |      |       | B6 |    |
| 20          | 21                | 26    | 31   | 36   | 41   | 46    | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
| 4                   |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        | 2.3          |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |      |       |       |                      |      |       |       | ID    |
|------------------------|------|-------|-------|----------------------|------|-------|-------|-------|
| REDUCING ATMOSPHERE    |      |       |       | OXIDIZING ATMOSPHERE |      |       |       |       |
| INIT                   | H=W  | H=W/2 | FLUID | INIT                 | H=W  | H=W/2 | FLUID |       |
| 2014                   | 2024 | 2044  | 2124  | 2328                 | 2358 | 2408  | 2598  | C1    |
| 20                     | 24   | 28    | 32    | 36                   | 40   | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |       |     |       |      |     |     | ID |    |
|-------------------------|-------|-----|-------|------|-----|-----|----|----|
| SIO                     | ALO   | TIO | FEO   | CAO  | MGO | NAO |    |    |
| 41.43                   | 11.56 | .83 | 32.97 | 4.38 | .33 | .91 | C3 |    |
| 20                      | 25    | 30  | 35    | 40   | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |      |      |       | ID |    |
|-------------------------|------|------|-------|----|----|
| KO                      | PO   | SO   | UNDTR |    |    |
| .43                     | 1.28 | 4.21 | -1.67 | C4 |    |
| 20                      | 25   | 30   | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

RECONSTITUTE PRODUCT

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | Seam 1    |            |     |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    |      |    |           |             |                  |     |    |    |
|     | 25404   | C  |    |      |    |           |             |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    |
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |    | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|----|------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT |    |                                          |    |
| A           | .81                | 6.73 |            |                   |    |                                          | B5 |
| R           |                    |      |            |                   |    |                                          | B5 |
| D           |                    |      |            |                   |    |                                          | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41 | 42                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |       |      |      |      |       | ID |    |
|-------------|-------------------|-------|------|------|------|-------|----|----|
|             | S %               | C %   | H %  | N %  | CL % | O %   |    |    |
| A           | .28               | 76.42 | 3.60 | 1.07 |      | 11.09 | B6 |    |
| R           |                   |       |      |      |      |       | B6 |    |
| D           |                   |       |      |      |      |       | B6 |    |
| 20          | 21                | 26    | 31   | 36   | 41   | 46    | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
| 4                   |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
| 77                     | 2.1          |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           | .02          | TR      |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |      |       |       |                      |       |       |       | ID |    |
|------------------------|------|-------|-------|----------------------|-------|-------|-------|----|----|
| REDUCING ATMOSPHERE    |      |       |       | OXIDIZING ATMOSPHERE |       |       |       |    |    |
| INIT                   | H=W  | H=W/2 | FLUID | INIT                 | H=W   | H=W/2 | FLUID |    |    |
| 2563                   | 2598 | +2650 | +2650 | +2650                | +2650 | +2650 | +2650 | C1 |    |
| 20                     | 24   | 28    | 32    | 36                   | 40    | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |       |      |      |      |      |      | ID |    |
|-------------------------|-------|------|------|------|------|------|----|----|
| SIO                     | ALO   | TIO  | FEO  | CAO  | NGO  | NAO  |    |    |
| 51.47                   | 25.21 | 1.54 | 7.67 | 3.35 | 1.57 | 1.81 | C3 |    |
| 20                      | 25    | 30   | 35   | 40   | 45   | 50   | 55 | 71 |

| MINERAL ANALYSIS OF ASH |      |      |       | ID |    |
|-------------------------|------|------|-------|----|----|
| KO                      | PO   | SO   | UNDTR |    |    |
| .83                     | 1.30 | 3.36 | 1.89  | C4 |    |
| 20                      | 25   | 30   | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

*Ply IV -> PLY IX*

RAW HEAD COMP

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | SEAM 1    |            |     |                  |     |             |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    |      |    |           |             |                  |     |    |    |
|     | 25404   | C  |    | 10   | 83 |           | 100         |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .74                | 11.10 | 20.01      |                   |       |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 11-18 | 20-15      |                   |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           |                   |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|-------------|--------------|-----------|----|------|----|
|                        |             |              |           |    | MSTR |    |
|                        |             |              |           | B8 |      |    |
| 20                     | 25          | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

COAL QUALITY DATA

*Ply IV → Ply IX*

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-------|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT   |    |
|     | 25404   | C |   | 10   | 83 |           | 48.20       |                  | 79.92 | B2 |

20 22 27 28 29 31 33 40 44 48 / 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .61                | 13.39 | 19.88      | 14978             | 1     | B5                                       |    |
| R           |                    |       |            |                   |       | B5                                       |    |
| D           |                    | 3.41  |            | 15070             |       | B5                                       |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 83-21 | SEAM 1    |            | M   | 19               | 6   |             | 1.40 | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 12.8              |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

20 25 30 35 40 45 71

*38.5% TOTAL HEAD*

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 82-21 | 36AM1     |            | M   | 19               | 6   | 1.40        | 1.60 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 28404 |           |             | c                |     |    | 10 |
| 20  | 22      | 27 | 28 | 29   | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .70                | 18.92 | 20.64      | 11702             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 19.05 |            | 11784             |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .22               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CA0 | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S. G. RANGE |       | ID |
|------|-------|-----------|------------|-------|------------------|-----|-------------|-------|----|
|      |       |           |            |       | MAX              | MIN | MIN         | MAX   |    |
|      | 83-21 | SGAM 1    |            | M     | 19               | 6   | 1.60        | 1.80  | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41          | 45 71 |    |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |      | ID    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|------|-------|
|     |         |    |    | M    | YR |           |             | SINK             | FLT  |       |
|     | 25404   | C  |    | 10   | 83 |           | 48.20       |                  | 1.84 | B2    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48   | 52 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID    |
|----------------|----|----|----|----|----|----|----|----|-------|
|                |    |    |    |    |    |    |    |    | B3    |
|                |    |    |    |    |    |    |    |    | B4    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .79                | 37.21 | 25.21      | 7676              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 37.51 |            | 7737              |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID    |
|-------------|-------------------|-----|-----|-----|------|-----|-------|
|             | S %               | C % | H % | N % | CL % | O % |       |
| A           | 1.15              |     |     |     |      |     | B6    |
| R           |                   |     |     |     |      |     | B6    |
| D           |                   |     |     |     |      |     | B6    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID    |
|---------------------|--------------------|-----------|-----------|----------|-------|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |       |
|                     |                    |           |           |          | B7    |
| 20                  | 23                 | 28        | 33        | 38       | 41 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID       |
|------------------------|--------------|--------------|-----------|----------|
|                        |              |              |           |          |
|                        |              |              |           | B8       |
| 20                     | 25           | 30           | 35        | 40 45 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID    |
|-------------|--------------|---------|-----------------------|----|-------|----|-------|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |       |
|             |              |         | NA                    | K  | NA    | K  |       |
| A           |              |         |                       |    |       |    | B9    |
| R           |              |         |                       |    |       |    | B9    |
| D           |              |         |                       |    |       |    | B9    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|-------|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |       |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |       |
|                        |     |       |       |                      |     |       |       | C1    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID    |
|-----------------------------|----|----|------|------------------------|--------|-------|
| NA                          | K  |    |      | (F)                    | POISES |       |
|                             |    |    |      |                        |        | C2    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID    |
|-------------------------|-----|-----|-----|-----|-----|-----|-------|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |       |
|                         |     |     |     |     |     |     | C3    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID    |
|-------------------------|----|----|-------|-------|
| KO                      | PO | SO | UNDTR |       |
|                         |    |    |       | C4    |
| 20                      | 25 | 30 | 35    | 40 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
|      | 83-21 | SEAM 1    |            | M   | 19               | 6   | 1.80       |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|-------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M     | YR |           |             | SINK             | FLT |    |    |
|     |         |    |    | 28404 | C  |           |             |                  | 10  |    | 83 |
| 20  | 22      | 27 | 28 | 29    | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .79                | 69.44 | 15.53      | 2474              | 1     |                                          | B5 |
| R           |                    |       |            |                   |       |                                          | B5 |
| D           |                    | 69.96 |            | 2494              |       |                                          | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                       | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .07               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |
|      | 83-21 | SEAM 1    |            | M   | 6                | 0.5 |             | 1.40 | B1   |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-------|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT   |    |    |
|     |         |    |    |      |    |           |             |                  |       |    |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48    | 52 | 71 |
|     | 25404   | C  |    | 10   | 83 |           | 39.14       |                  | 83.89 |    | B2 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 6.5                | 3.15 | 20.83      | 15002             | 1     | B5                                    |    |
| R           |                    |      |            |                   |       | B5                                    |    |
| D           |                    | 3.17 | 20.97      | 15100             |       | B5                                    |    |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 29                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |
|                        |     |       |       |                      |     |       |       |    | C1 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |
|                             |    |    |      |                        |        |    | C2 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FE0 | CAO | MGO | NAO |    |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |
|                         |     |     |     |     |     |     |    | C3 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |
|                         |    |    |       |    | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25404 | e  |           |             | 10               | 83  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .78                | 20.00 | 18.44      | 11816             | 1     | B5                                    |    |
| R           |                    |       |            |                   |       | B5                                    |    |
| D           |                    | 20.16 |            | 11909             |       | B5                                    |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     |    |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX  |      |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41   | 4571 |
|      | 83-21 | SGAM1     |            | M   | 6                | 0.5 | 1.60       | 1.60 | B1   |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .21               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25404 | C  |           |             |                  | 10  |    |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|------------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                          |    |
| A           | .84                | 36.11 | 20.29      | 8723              | 1     | B5                                       |    |
| R           |                    |       |            |                   |       | B5                                       |    |
| D           |                    | 36.41 |            | 8797              |       | B5                                       |    |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |      |           |            |     | MAX              | MIN | MIN         | MAX |      |
| 01   | 04   | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .17               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |      |
|      | 83-21 | SEAM 1    |            | M   | 6                | 0.5 | 1.80        |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41  | 4571 |

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | 25404   | C  |    | 10   | 83 |           | 39.4        | 8.13             |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 1.18               | 73.17 | 12.52      | 2197              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 74.04 |            | 2223              |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .07               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALD | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
|      | 83-21 | SBAM1     |            | M   | 0.5              | 0   |            |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT |    |    |
|     | 25404   | C  |    | 10   | 83 |           | 12.66       |                  |     | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .96                | 16.12 | 19.44      | 12562             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 16.28 |            | 12684             |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .26               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DBPH |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

RECONSTITUTE PRODUCT

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25404 | C  |           |             | 11               | 83  |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .88                | 4.05 |            |                   |       |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
| 2                   |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           | .05          | TR      |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |      |       |       |                      |      |       |       | ID |
|------------------------|------|-------|-------|----------------------|------|-------|-------|----|
| REDUCING ATMOSPHERE    |      |       |       | OXIDIZING ATMOSPHERE |      |       |       |    |
| INIT                   | H=W  | H=W/2 | FLUID | INIT                 | H=W  | H=W/2 | FLUID |    |
| 2343                   | 2423 | 2493  | 2578  | 2413                 | 2503 | 2583  | +2650 | C1 |

| MINERAL ANALYSIS OF ASH |       |      |       |      |     |      | ID |
|-------------------------|-------|------|-------|------|-----|------|----|
| SiO                     | AlO   | TiO  | FeO   | CaO  | MgO | NaO  |    |
| 46.77                   | 24.13 | 1.46 | 13.57 | 2.25 | .79 | 1.25 | C3 |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | Seam 2    |            |     |                  |     |             |     | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |  |    | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |       |      |      |      |       | ID |
|-------------|-------------------|-------|------|------|------|-------|----|
|             | S %               | C %   | H %  | N %  | CL % | O %   |    |
| A           | .41               | 77.85 | 3.76 | 1.04 |      | 12.01 | B6 |
| R           |                   |       |      |      |      |       | B6 |
| D           |                   |       |      |      |      |       | B6 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
| 78                     | 1.8         |              |           | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |      |      |       | ID |
|-------------------------|------|------|-------|----|
| KO                      | PO   | SO   | UNDTR |    |
| .28                     | 4.20 | 2.90 | 2.40  | C4 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

*Ply I → III*

| PROS | HOLE  | TOP (F/H) | BASE (F/H) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | SEAM 2    |            |     |                  |     |             |     | B1 |

CARD COLUMN:

01 04 12 19 26 27 32 37 41 4571

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | 25404   | C |   | 10   | 83 |           | 100         |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .82                | 6.80 | 21.10      |                   |       |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    |      |            |                   |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           |                   |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DOPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             |              |         | ACID                  |   | WATER |   |    |
|             | PYRITIC      | SULFATE | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |      | ID |
|-------------------------|----|----|------|----|
| KO                      | PO | SO | UNDR |    |
|                         |    |    |      | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,C8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M   | SCREEN SIZE (MM) |     | S.G. RANGE |      | ID |
|------|-------|-----------|------------|-------|------------------|-----|------------|------|----|
|      |       |           |            |       | MAX              | MIN | MIN        | MAX  |    |
|      | 83-21 | SEAM 2    |            | M     | 19               | 6   |            | 1.40 | B1 |
| 01   | 04    | 12        | 19         | 26 27 | 32               | 37  | 41         | 4571 |    |

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-------|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT   |    |
|     | 28404   | C  |    | 10   | 83    |           | 51.88       |                  | 88.20 | B2 |
| 20  | 22      | 27 | 28 | 29   | 31 33 | 40        | 44          | 48               | 52    | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .59                | 3.00 | 19.84      | 15.005            | 1     |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    | 3.02 |            | 15094             |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .39               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |
|-------------|--------------|---------|-----------------------|----|-------|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |
| A           |              |         |                       |    |       |    | B9 |
| R           |              |         |                       |    |       |    | B9 |
| D           |              |         |                       |    |       |    | B9 |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|----|----|------|------------------------|--------|----|
| NA                          | K  |    |      | (F)                    | POISES |    |
|                             |    |    |      |                        |        | C2 |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |
| 20                      | 25 | 30 | 35    | 40 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-21 | SEAM 2    |            | M   | 19               | 6   | 1.46        | 1.60 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 25404 |           |             | C                |     |    | 10 |
| 20  | 22      | 27 | 28 | 29   | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 15.2               | 18.64 | 22.56      | 11290             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 18.74 |            | 11349             |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | 27                |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.



CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |      |
|      | 83-21 | SGAMX     |            | M   | 19               | 6   | 1.60        | 1.80 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37          | 41   | 4571 |

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |      | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|------|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT  |    |    |
|     |         |    |    |      |    |           |             |                  |      |    |    |
|     | 28704   | C  |    | 10   | 83 |           | 47.88       |                  | 3.66 | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48   | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .86                | 34.60 | 25.11      | 8544              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 34.79 |            | 8592              |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .20               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     |    | C3 |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       |    | C4 |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE  |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|-------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M     | YR |           |             | SINK             | FLT |    |
|     |         |   |   | 25404 | C  |           |             |                  | 10  |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |   | UNITS | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|---|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT |   |       |                                       |    |
| A           | .86                | 46.47 | 32.20      | 56.8              | 1 |       | B5                                    |    |
| R           |                    |       |            |                   |   |       | B5                                    |    |
| D           |                    | 46.73 |            | 56.90             |   |       | B5                                    |    |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | NGO | NAO |    |
|                         |     |     |     |     |     |     |    |

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | SEAM 2-   |            | M   | 19               | 6   | 1.80        |     | B1 |

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |    |
|----------------|--|--|--|--|--|--|--|--|----|----|
|                |  |  |  |  |  |  |  |  |    | B3 |
|                |  |  |  |  |  |  |  |  |    | B4 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .12               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       |    |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |      | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|------|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX  |      |
|      | 83-21 | SEAM 2    |            | M   | 6                | 0.5 |            | 1.40 | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41   | 4571 |

CARD COLUMN:

| LAB | LAB NUM | C  | T  | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |       | ID |    |
|-----|---------|----|----|------|----|-----------|-------------|------------------|-------|----|----|
|     |         |    |    | M    | YR |           |             | SINK             | FLT   |    |    |
|     | 28404   | C  |    | 10   | 83 |           | 4.82        |                  | 90.53 | B2 |    |
| 20  | 22      | 27 | 28 | 29   | 31 | 33        | 40          | 44               | 48    | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    |    |    | B3 |
|                |    |    |    |    |    |    |    |    |    |    | B4 |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |    |

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .81                | 2.58 | 2.63       | 14610             | 1     |                                       | B5 |
| R           |                    |      |            |                   |       |                                       | B5 |
| D           |                    | 2.60 |            | 14729             |       |                                       | B5 |
| 20          | 21                 | 26   | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .42               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 83-21 | SEM 2     |            | M   | 6                | 0.5 | 1.40        | 1.60 | B1 |

01 04 12 19 26 27 32 37 41 45 71

| LAB | LAB NUM | C | T | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|-------|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR    |           |             | SINK             | FLT |    |
|     |         |   |   |      | 28604 |           |             | C                |     |    |

20 22 27 28 29 31 33 40 44 48 52 71

| SAMPLE NUMBERS |  |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 65                 | 19.83 | 19.95      | 11762             | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 11.96 |            | 11839             |       |                                       | B5 |

20 21 26 31 36 41 42 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 24                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOCITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4.  
LEFT JUSTIFY ALL FIELDS.

COOM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |      | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|------|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT  |    |
|     | 28404   | C |   | 10   | 83 |           | 41.82       |                  | 1.91 | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | 57                 | 36.50 | 24.83      | 8201              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 36.71 |            | 8248              |       |                                       | B5 |

20 21 26 31 36 41 42 71

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |      | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|------|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX  |    |
|      | 83-21 | SEAM 2    |            | M   | 6                | 0.5 | 1.60        | 1.80 | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | 19                |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|--------------|--------------|-----------|----|
|                        |              |              |           |    |
|                        |              |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S.G. RANGE |     | ID   |
|------|-------|-----------|------------|-----|------------------|-----|------------|-----|------|
|      |       |           |            |     | MAX              | MIN | MIN        | MAX |      |
|      | 83-21 | SEAM 2    |            | M   | 6                | 0.5 | 1.8        |     | B1   |
| 01   | 04    | 12        | 19         | 26  | 27               | 32  | 37         | 41  | 4571 |

| LAB | LAB NUM | C  | T  | DATE |       | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |    |
|-----|---------|----|----|------|-------|-----------|-------------|------------------|-----|----|----|
|     |         |    |    | M    | YR    |           |             | SINK             | FLT |    |    |
|     |         |    |    |      | 28404 |           |             | C                |     |    | 10 |
| 20  | 22      | 27 | 28 | 29   | 31    | 33        | 40          | 44               | 48  | 52 | 71 |

| SAMPLE NUMBERS |    |    |    |    |    |    |    |    | ID |    |
|----------------|----|----|----|----|----|----|----|----|----|----|
|                |    |    |    |    |    |    |    |    | B3 |    |
|                |    |    |    |    |    |    |    |    | B4 |    |
| 20             | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 71 |

| BASIS A,R,D | PROXIMATE ANALYSIS |       |            |                   |       | UNITS=1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|-------|------------|-------------------|-------|---------------------------------------|----|
|             | MSTR               | ASH   | VOL MATTER | CALORIFIC CONTENT | UNITS |                                       |    |
| A           | .42                | 49.68 | 31.68      | 4382              | 1     |                                       | B5 |
| R           |                    |       |            |                   |       |                                       | B5 |
| D           |                    | 49.86 |            | 4400              |       |                                       | B5 |
| 20          | 21                 | 26    | 31         | 36                | 41    | 42                                    | 71 |

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |    |
|-------------|-------------------|-----|-----|-----|------|-----|----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |    |
| A           | .11               |     |     |     |      |     | B6 |    |
| R           |                   |     |     |     |      |     | B6 |    |
| D           |                   |     |     |     |      |     | B6 |    |
| 20          | 21                | 26  | 31  | 36  | 41   | 46  | 51 | 71 |

| FREE SWELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |    |
|---------------------|--------------------|-----------|-----------|----------|----|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPM |    |    |
|                     |                    |           |           |          | B7 |    |
| 20                  | 23                 | 28        | 33        | 38       | 41 | 71 |

| HARDGROVE GRINDABILITY | EQUILIB MSTR | SURFACE MSTR | SPEC GRAV | ID |      |    |
|------------------------|--------------|--------------|-----------|----|------|----|
|                        |              |              |           |    | MSTR |    |
|                        |              |              |           | B8 |      |    |
| 20                     | 25           | 30           | 35        | 40 | 45   | 71 |

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |    |       |    | ID |    |
|-------------|--------------|---------|-----------------------|----|-------|----|----|----|
|             | PYRITIC      | SULFATE | ACID                  |    | WATER |    |    |    |
|             |              |         | NA                    | K  | NA    | K  |    |    |
| A           |              |         |                       |    |       |    | B9 |    |
| R           |              |         |                       |    |       |    | B9 |    |
| D           |              |         |                       |    |       |    | B9 |    |
| 20          | 21           | 26      | 31                    | 36 | 41    | 46 | 51 | 71 |

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |    |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |    |
|                        |     |       |       |                      |     |       |       | C1 |    |
| 20                     | 24  | 28    | 32    | 36                   | 40  | 44    | 48    | 52 | 71 |

| ASH ALKALIDES WATER SOLUBLE |    | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |    |
|-----------------------------|----|----|------|------------------------|--------|----|----|
| NA                          | K  |    |      | (F)                    | POISES |    |    |
|                             |    |    |      |                        |        | C2 |    |
| 20                          | 26 | 32 | 37   | 41                     | 45     | 49 | 71 |

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |    |
|-------------------------|-----|-----|-----|-----|-----|-----|----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |    |
|                         |     |     |     |     |     |     | C3 |    |
| 20                      | 25  | 30  | 35  | 40  | 45  | 50  | 55 | 71 |

| MINERAL ANALYSIS OF ASH |    |    |       | ID |    |
|-------------------------|----|----|-------|----|----|
| KO                      | PO | SO | UNDTR |    |    |
|                         |    |    |       | C4 |    |
| 20                      | 25 | 30 | 35    | 40 | 71 |

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.

CODM QUALITY DATA

CARD COLUMN:

| LAB | LAB NUM | C | T | DATE |    | UNIT NAME | WT % OF TTL | WT % OF SCREENED |     | ID |
|-----|---------|---|---|------|----|-----------|-------------|------------------|-----|----|
|     |         |   |   | M    | YR |           |             | SINK             | FLT |    |
|     | 28404   | C |   | 10   | 83 |           | 6.30        |                  |     | B2 |

20 22 27 28 29 31 33 40 44 48 52 71

| BASIS A,R,D | PROXIMATE ANALYSIS |      |            |                   |       | UNITS=<br>1=BTU/LB<br>2=CAL/GM<br>3=KJ/KG | ID |
|-------------|--------------------|------|------------|-------------------|-------|-------------------------------------------|----|
|             | MSTR               | ASH  | VOL MATTER | CALORIFIC CONTENT | UNITS |                                           |    |
| A           | .67                | 4.60 | 21.73      | 1448              | 1     |                                           | B5 |
| R           |                    |      |            |                   |       |                                           | B5 |
| D           |                    | 4.63 |            | 14515             |       |                                           | B5 |

20 21 26 31 36 41 42 71

| FREE SNELLING INDEX | GIESLER PLASTICITY |           |           |          | ID |
|---------------------|--------------------|-----------|-----------|----------|----|
|                     | SOFT (F)           | FLUID (F) | SOLID (F) | MAX DDPH |    |
|                     |                    |           |           |          | B7 |

20 23 28 33 38 41 71

| BASIS A,R,D | SULFUR TYPES |         | SOLUBLE COAL ALKALIES |   |       |   | ID |
|-------------|--------------|---------|-----------------------|---|-------|---|----|
|             | PYRITIC      | SULFATE | ACID                  |   | WATER |   |    |
|             |              |         | NA                    | K | NA    | K |    |
| A           |              |         |                       |   |       |   | B9 |
| R           |              |         |                       |   |       |   | B9 |
| D           |              |         |                       |   |       |   | B9 |

20 21 26 31 36 41 46 51 71

| FUSION TEMPERATURE (F) |     |       |       |                      |     |       |       | ID |
|------------------------|-----|-------|-------|----------------------|-----|-------|-------|----|
| REDUCING ATMOSPHERE    |     |       |       | OXIDIZING ATMOSPHERE |     |       |       |    |
| INIT                   | H=W | H=W/2 | FLUID | INIT                 | H=W | H=W/2 | FLUID |    |
|                        |     |       |       |                      |     |       |       | C1 |

20 24 28 32 36 40 44 48 52 71

| MINERAL ANALYSIS OF ASH |     |     |     |     |     |     | ID |
|-------------------------|-----|-----|-----|-----|-----|-----|----|
| SIO                     | ALO | TIO | FEO | CAO | MGO | NAO |    |
|                         |     |     |     |     |     |     | C3 |

20 25 30 35 40 45 50 55 71

| PROS | HOLE  | TOP (F/M) | BASE (F/M) | F/M | SCREEN SIZE (MM) |     | S. G. RANGE |     | ID |
|------|-------|-----------|------------|-----|------------------|-----|-------------|-----|----|
|      |       |           |            |     | MAX              | MIN | MIN         | MAX |    |
|      | 83-21 | SEAM 2    |            | M   | 0.5              | 0   |             |     | B1 |

01 04 12 19 26 27 32 37 41 4571

| SAMPLE NUMBERS |  |  |  |  |  |  |  | ID |
|----------------|--|--|--|--|--|--|--|----|
|                |  |  |  |  |  |  |  |    |
|                |  |  |  |  |  |  |  | B3 |
|                |  |  |  |  |  |  |  | B4 |

20 24 28 32 36 40 44 48 52 56 71

| BASIS A,R,D | ULTIMATE ANALYSIS |     |     |     |      |     | ID |
|-------------|-------------------|-----|-----|-----|------|-----|----|
|             | S %               | C % | H % | N % | CL % | O % |    |
| A           | .42               |     |     |     |      |     | B6 |
| R           |                   |     |     |     |      |     | B6 |
| D           |                   |     |     |     |      |     | B6 |

20 21 26 31 36 41 46 51 71

| HARDGROVE GRINDABILITY | EQUILB MSTR | SURFACE MSTR | SPEC GRAV | ID |
|------------------------|-------------|--------------|-----------|----|
|                        |             |              |           |    |
|                        |             |              |           | B8 |

20 25 30 35 40 45 71

| ASH ALKALIDES WATER SOLUBLE |   | CO | T250 | ASH CRITICAL VISCOSITY |        | ID |
|-----------------------------|---|----|------|------------------------|--------|----|
| NA                          | K |    |      | (F)                    | POISES |    |
|                             |   |    |      |                        |        | C2 |

20 26 32 37 41 45 49 71

| MINERAL ANALYSIS OF ASH |    |    |       | ID |
|-------------------------|----|----|-------|----|
| KO                      | PO | SO | UNDTR |    |
|                         |    |    |       | C4 |

20 25 30 35 40 71

KEYPUNCHER: KEEP CARDS IN ORDER B1,B2,B3,B4,B5,B6,B7,B8,B9,C1,C2,C3,C4. LEFT JUSTIFY ALL FIELDS.