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GEOLOGY OF THE FALLING CREEK PROPERTY

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역사 등 경기 병사 때

LICENSES 6370-6412 and 6417-6428 in the Peace River Land District

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

ON NTS MAP SHEETS 930/8 (primarily), 930/9, 93P/4, 93P/5.

LICENSES OWNED AND OPERATED BY

ESSO RESOURCES CANADA LTD.

237 - 4th Avenue S.W.

Calgary, Alberta
T2P 0H6

S. WORK COMPLETED BETWEEN July 1982 and August 30, 1982

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Abstract

The Falling Creek Property, located in the Northeast British Columbia coalfield, consists of 54 licenses covering 15, 874 hectares.

The property is underlain by the Lower Cretaceous Fort St. John and Crassier/Bullhead Groups. The coal measures of the Crassier/Bullhead Group comprise conglomerates, sandstones, siltstones, mudstones, carbonaceous mudstones and coals. The main coal bearing formation within the property is the Gething Formation. Five coal seams within the Gething are correlatable across the property; one attains a thickness of ten meters.

The structure is fold dominated with minor associated thrust faulting. The amplitude of the folds and the displacement of the faults throughout the property vary with the intensity of deformation.

The objectives of the 1982 field program were designed to confirm and expand upon the correlations and observations that had been concluded from previous years work. The program was two-phased, comprising mapping and drilling.

The coal seams are generally ranked as medium volatile bituminous, and thought to be an excellent thermal blend coal. Speculative coal reserves are substantial, although indicated reserves are still modest. Extensive drilling will be required to increase proven reserves and define mineable reserve areas.

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1.0 INTRODUCTION

1.1 1982 FIELD PROGRAM OBJECTIVES

The 1982 program was designed to confirm and expand upon the correlations and observations that had been concluded from the previous years work. The program was two-phased, comprising mapping and drilling. The objectives of the mapping program were to:

- (1) complete the mapping of the property on a 1:10,000 scale;
- (2) expand upon and reconfirm field observations in stratigraphic problem areas and in significant coal seams.

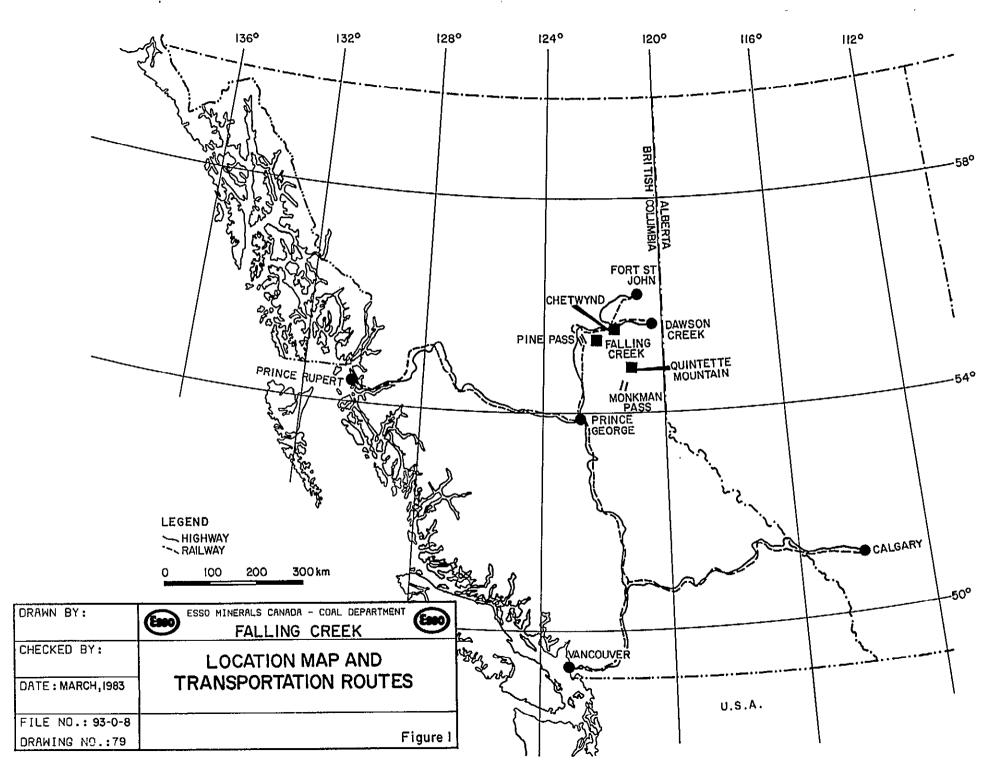
The drilling program objectives were to:

- (1) test the seam correlations;
- (2) test the continuity of the seams;
- (3) define coal reserve areas;
- (4) confirm the stratigraphy from the field mapping.

In general the program's primary objective was to further understand the stratigraphy and structure of the property, and to define a mineable reserve.

1.2 LOCATION AND ACCESS

The Falling Creek licenses lie within the northeast British Columbia coalfield trend in the Peace River Land District (Figure 1).



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The main property, called Falling Creek, 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 3).

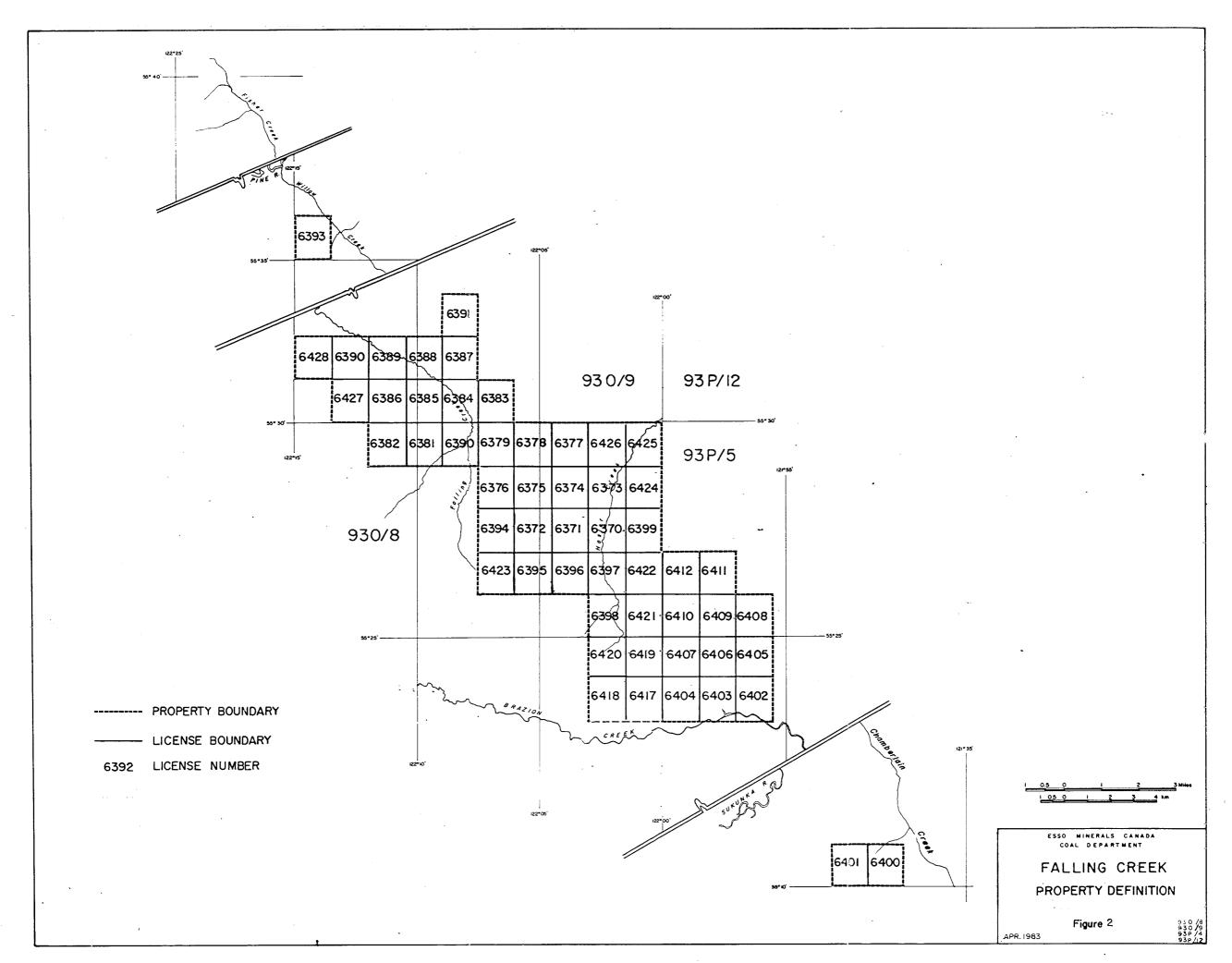
One license, known as Willow Creek, is within NTS unit 93 0/9 at 55° 19' N Latitude, 122° 15' W Longitude.

Two other licenses, known as Chamberlain Creek, are within NTS unit 93 P/4 at 55° 10' N Latitude, 121° 36' W Longitude.

The licenses held by Esso Resources Canada Ltd. cover 15,874 hectares.

The Falling Creek property is approximately 50 kilometers (km) southwest of Chetwynd, B.C. The John Hart Highway (Highway 97), and the B.C. Rail line connect Chetwynd with Dawson Creek, 100 km to the east, and Prince George, 310 km to the southwest (Figure 1). The Hasler Creek forestry road joins the John Hart Highway 24 km west of Chetwynd. This forestry road runs through the southern portion of the Falling Creek property between kilometers 18 and 32.

In the southern portion of the property, washed out logging roads occur in clear cut areas and occasional seismic lines cross-cut the property. The northern portion of Falling Creek is accessed by helicopter. The Willow Creek license is accessed from a bush road off Highway 97, 40 km west of Chetwynd. The Chamberlain Creek licenses are 65 km south along the Sukunka River forestry road; there is no direct road access, as the licenses are 3 km south of the forestry road.



1.3 GEOGRAPHY

The Falling Creek property lies within the foothills physiographic region of the Rocky Mountains (Figure 3). The foothills in this region have considerable relief, with elevations between 900 and 2000 m. Ridges generally trend northwest-southeast. The property is heavily forested with limited areas above the treeline (1700 m).

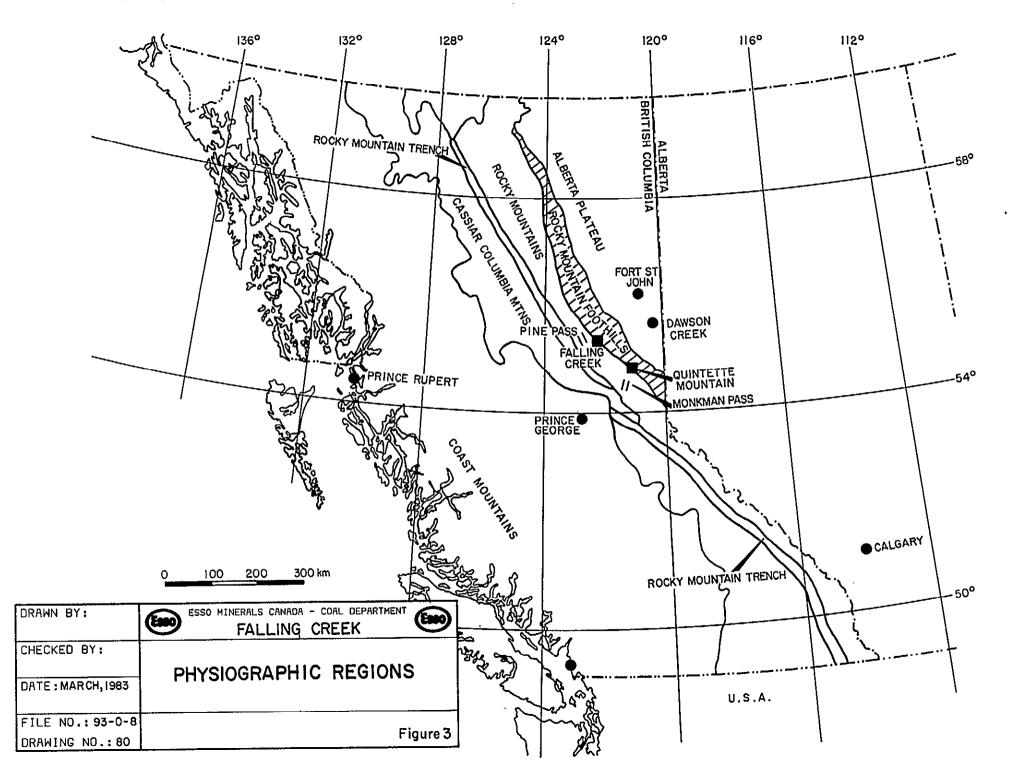
Outcrop exposures are best observed in creeks, road cuts, logged clear cuts and exposed ridges above treeline.

1.4 PREVIOUS WORK

Esso Resources Canada Ltd. acquired the Falling Creek licenses in May 1980. Preliminary geological mapping and one rotary drill hole were completed in the summer of 1980 (Geology of Falling Creek licenses 1980, Report submitted July 1981). Five licenses were dropped following the recommendations of the summers work.

During the summer of 1981, detailed geological mapping was undertaken on a scale of 1:10,000; the program was helicopter and truck supported. Three backhoe trenches were dug to determine the extent of coal seams over a small area at the southern end of the property. Three diamond drill holes were completed in September 1981. A suite of geophysical logs was run on every hole. The core was geologically logged in detail and coal samples were sent for proximate analysis. Numerous outcrop and trench samples were also analyzed (Geology of Falling Creek Licenses 1981, report submitted June 1982).

The earliest coal exploration in the area was between 1946 and 1951. The Coal Division of the B.C. Department of Lands and Forests conducted a coal exploration program to estimate



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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 licenses on the area presently leased to Esso Resources Canada Ltd. Pan Ocean completed a number of drill holes which are located on what is now the Falling Creek property. The stratigraphic section was thought to be Lower Gething Formation. The licenses were dropped by Pan Ocean and subsequently acquired and dropped again by Manalta. Esso Resources acquired the property in May, 1980.

1.5 WORK COMPLETED BY EMC IN 1982

The 1982 program was two-phased, comprising mapping and drill-ing (Table 1).

The mapping program was truck and helicopter supported. Outcrops were plotted with the use of chains and compass, topographic maps and air photos. The program proved more difficult than in previous years because of inaccessible areas and sparse outcrop exposure. Fly camps were used to increase accessibility and reduce helicopter time. Upon completion of the mapping program, the property had been sufficiently mapped on the 1:10,000 scale (Traverse Map, Figure 14).

New coal outcrops were uncovered during drill site preparation and road building. The new outcrops, as well as other coal seams mapped in previous years, were trenched and logged (Plate 1 and Table 6).



PLATE 1: The Brenda Seam

Example of detailed trenching, logging and sampling of coal seam.

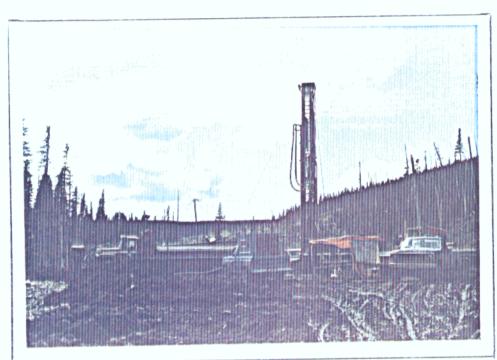
A truck mounted downhole hammer drill was used to complete fourteen drill holes (Table 2). The average drill hole depth was 200 m. Chip samples were taken every three meters. Each sample was described in detail. All coal seams intersected were sampled. Two shallow (< 50 m) drill holes (11P1 and 11P2) were completed to test for the Brenda coal seam. One core hole (HQ) was drilled to sample the Brenda seam intersected in 11P1 (Drill Hole Location Map, Figure 15).

Samples of coal seams with significant thicknesses were sent to labs for vitrinite reflectance estimates and proximate analyses (Tables 8, 9, 10, 11).

A suite of geophysical logs consisting of natural gamma, bulk density, neutron, caliper, deviation and dipmeter was run on every hole (Figures 36-50). Most drill sites were located in areas with existing access on logging or seismic trails, or adjacent to the Hasler Creek forestry road (Plates 2 and 3). Caterpillar work was needed to upgrade the trails to bring in the drilling truck. Two drill sites required construction of two new trails in the forest fire burn (south of the logging area).

All drill sites adjacent to the Hasler Creek forestry road and the new trails were reclaimed according to government regulations.

Destruction of bridges and erosion along the Hasler Creek forestry road, caused by heavy rains and flooding, necessitated additional expenditure in caterpillar time and travel time to and from the property.



DRILL HOLE 82-7

PLATE 2

PLATE 3

DRILL HOLE 82-10

EXAMPLES OF DRILL HOLES COMPLETED FROM EXISTING ACCESS WITH TRUCK MOUNTED HAMMER RIG.



TABLE 1

LIST OF WORK COMPLETED 1982

Geologic Mapping

- completed on all 54 licenses: 6370 - 6412 inclusive

6417 - 6428 inclusive

Drilling - completed on seven licenses: 6371, 6395, 6396, 6398,

6404, 6419, 6420.

TABLE 2

DRILL HOLES COMPLETED 1982

DRILL HOLE NUMBER	LOCATION UTM	ELEVATION METERS	DEPTH METERS	TYPE OF SAMPLE	GEOPHYSICAL LOGS
82-1	60410 E 41650 N	1272	198	Chips	Coal Combination Sonde (CCS) (includes, Gamma Ray, Density, Caliper) Neutron- Neutron, Dip Meter
82-2	5 60975 E 4 /41735 N	1165	198	Chips	CCS, Neutron-Neutron, Dip Meter
82-3	563140 E 6/39780N	1140	180	Chips	CCS, Neutron-Neutron, Dip Meter
82-4	561865 E 6/40130 N	1237	201	Chips	CCS, Neutron-Neutron, Dip Meter
82-5	60240 E 41090 N	1338	198	Chips	CCS, Neutron-Neutron, Dip Meter
?-6	59063 E 43262 N	1255	201	Chips	CCS, Neutron-Neutron, Dip Meter
82-7	58437 E 43480 N	1230	200	Chips	CCS, Neutron-Neutron, Dip Meter
82-8	58595E 44900 N	1268	200	Chips	CCS, Neutron-Neutron, Dip Meter
82-9	58875 E 45105 N	1258	200	Chips	CCS, Neutron-Neutron, Dip Meter
82-10	58080 E 44255 N	∙1352	171	Chips	CCS, Neutron-Neutron, Dip Meter
82-11P1	60735 E 42105 N	1177	27	Chips	CCS, Neutron-Neutron
82-11P2	60660 E 42145 N	1187	50	Chips	CCS, Neutron-Neutron, Dip Meter
82-11CH	60695 E 42150 N	1187	. 11	HQ Core	CCS, Neutron- Neutron
81-12	63730 E 39400 N	1105	200	Chips	CCS, Neutron-Neutron, Dip Meter
82-13	62470 E 40720 N .	1152	171	Chips	CCS, Neutron-Neutron, Dip Meter

TOTAL DEPTH

2/06 ---

TABLE 3

1.6 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.

License Number	Description		
,	MAP 93 0/8		
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	
	MAP 93 0/9		
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	
6387	Units 21, 22, 31, 32	293	
6388	Units 23, 24, 33, 34	293	
6389	Units 25, 26, 35, 36	293	

TABLE 3 (Continued)

License Number	Description	Hectares
	Map 93 0/9	
6390	Block B, Units 27, 28, 37, 38	293
6391	Units 41, 42, 51, 52	293
6393	Block G, Units 9, 10, 19, 20	293
	Map 93 0/8	
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
	Map 93 P/4	
6400	Block J, Units 1, 2, 11, 12	296
6401	Block J, Units 3, 4, 13, 14	296
	Map 93 P/5	
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

TABLE 3 (Continued)

License Number	Description	Hectares
	MAP 93 0/8	
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
	MAP 93 0/9	
6427	Block B, Units 7, 8, 17, 18	293
6428	Units 29, 30, 39, 40	293
	TOTAL	15,872

2.0 STRATIGRAPHY

2.1 REGIONAL STRATIGRAPHY

The Falling Creek property lies within the Northeast British Columbia coalfield. In this region, during late Jurassic to early Tertiary time, an easterly thinning clastic wedge developed through periods of deposition and erosion.

The coalfields in the Pine Pass are underlain by the Lower Cretaceous Fort St. John and Crassier/Bullhead Groups. The Crassier/Bullhead Group comprises conglomerates, sandstones, siltstones, mudstones, and coal. It is collectively described as coal measures, but may contain marine horizons. The Fort St. John Group overlies the Crassier Group and is comprised of marine mudstones in the lower two-thirds with alternating marine and continental sediments in the upper one third (Table 4).

Dominantly marine sediments of the Lower Cretaceous Beaudette/Minnes Group underlie the Crassier/Bullhead Group coal measures. Although this group has not been economically important, it has been significant in understanding the stratigraphic and structural interpretations of the Pine Pass area.

The Fort St. John and Crassier /Bullhead Groups have been described in regional and local stratigraphic studies by Stott (1967, 1971, 1973), Hughes (1964, 1967), McKechnie (1955), Duff and Gilchrist (1981) and others.

For the purpose of this report, we will use the definitions described by Hughes (1964), as they have been the most useful in our field mapping.

TABLE 4

LOCAL STRATIGRAPHY FALLING CREEK

J.E. HUGHES		STOTT. & GSC	
GROUP	FORMATION	GROUP	FORMATION
FORT ST. JOHN	COMMOTION	FORT ST. JOHN	COMMOTION
	MOOSEBAR		MOOSEBAR
	GETHING		GETHING
CRASSIER		BULLHEAD	
	DRESSER		CADOMIN
	BRENOT		BICKFORD
	MONACH		MONACH
BEAUDETTE			
	BEATTIE PEAKS	MINNES	BEATTIE PEAKS
	MONTIETH		MONTIETH
	FERNIE		FERNIE _.

2.2 LOCAL STRATIGRAPHY

2.2.1 Introduction

The Falling Creek property is almost entirely underlain by the Crassier/Bullhead Group. The Group is divided in ascending order into the Brenot, Dresser and Gething Formations (Table 4). The Gething Formation is the most significant coal bearing formation in the region (Geology Map, Figure 7).

The Fort St. John Group consists of the Moosebar, Commotion, Hasler, Goodrich, and Cruiser Formations. The Moosebar Formation is an important stratigraphic marker and is exposed in two outcrops in the northern portion of the property (Plate 13). Much of the heavily treed, gently rolling terrain along Falling Creek is believed to be underlain by the Moosebar Formation. To the east of the Falling Creek Property, the Moosebar Formation outcrops on the flanks of Falls Mountain.

West of the property, the Beaudette/Minnes Group consisting of the Montieth, Beattie Peaks and Monach Formations is well exposed on Mt. Le Hudette. Here the Montieth and Beattie Peaks Formations are exposed in the core of the Bickford Anticline. Down the ridge to the east, numerous white quartzite ribs of the Monach Formation are exposed. These quartzite ribs are significant in defining the lower boundary of the Crassier Group coal measures. The Beaudette Group does not outcrop within the Falling Creek property.

The geologic evaluation of the Falling Creek property primarily involves the Gething and Dresser Formations of the Crassier/Bullhead Group and the Moosebar Formation of the Fort St. John Group. The following discussions will deal mainly with these formations.

2.2.2 The Crassier/Bullhead Group

The Crassier Group are coal measure cyclothems consisting of mudstones, carbonaceous mudstones, siltstones, sandstones, grits, conglomerates and coals. The group is divided into formations on the basis of development of cyclothems, abundance of coal seams, occurrences of coarse sandstones, grits, conglomerates, and the overall mudstone/sandstone (fine/coarse) ratio. There are no obvious stratigraphic divisions or consistent marker beds. Commonly, large segments of the stratigraphic sequence, rather than individual outcrops, are needed to distinguish the stratigraphy on a formational basis. This situation, coupled with the folding and faulting of the Inner Foothills belt, causes problems in mapping and correlation of the stratigraphy on surface and in drill holes.

The mapping and drilling programs on the Falling Creek property have allowed us to make the following observations on the Moosebar, Gething, Dresser and Brenot Formations:

2.2.3 The Gething Formation

- o The upper contact of the Gething Formation is picked at the base of the marine mudstones of the Moosebar Formation.
- o An argillaceous sandstone/conglomerate known as the Bluesky Formation occurs at the base of the Moosebar mudstones.
- o The Bluesky Formation is an excellent marker in the field and in core for definition of the top of the Gething.
- o Well-developed cyclothems, culminating in coaly mudstones or coal seams (many meters thick), are characteristic of the Gething (Plate 4).

- o Carbonaceous plant fragments are abundant in all lithologies.
- o Coal seams are most abundant in the upper half of the formation.
- o A thick coal seam approximately 50 m from the top of the formation may be used to correlate the Gething across the property and within the Chetwynd area.
- o Five other coal seams have been correlated across the property. The correlations between drill holes are sometimes tenuous due to the variability of depositional and structural parameters of the coal seams and stratigraphy.
- o In most areas a minimum depth of 200 m is needed to correlate drill holes, due to stratigraphic and coal seam variations.
- o Sandstone beds (1-5 m thick) are usually very fine to fine-grained with siltstone laminations, cross laminations and interbeds (Plates 5 and 7).
- o In drill chips, the sandstones are commonly fine-grained; the geophysical log response seldom indicates coarse grain sizes.
- o Occasional lag deposits with coarser grain sizes and ripup clasts are present at the base of some sandstone beds.
- o Sand channels over 15 m thick have been seen in outcrop, but have not been intersected in drill holes.

GETHING FORMATION

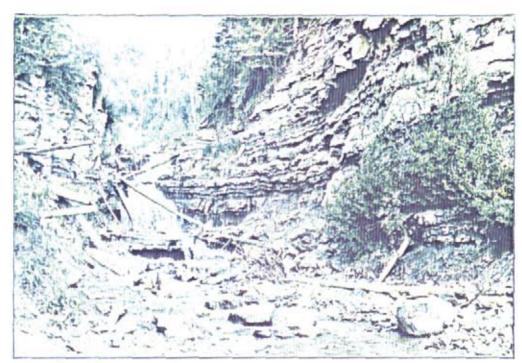


PLATE 4: Susan Creek

Example of thinly bedded, well developed cyclothems.



PLATE 5: Susan Creek

Example of well developed cyclothems, truncated by thick channel sands.



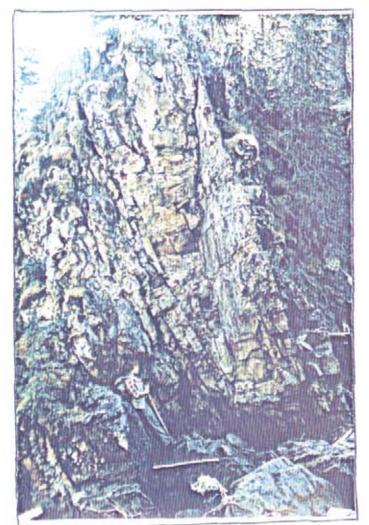


PLATE 6: H022B Pebble horizon in medium grained sandstone.

Slickensiding in large channel sand in Exposure Creek.

PLATE 7:

- o Thick sand bodies are thought to be lenticular and discontinuous and therefore are infrequently intersected by drilling. However, as these sands are resistant to weathering, they frequently form prominant outcrops.
- o Clean, medium-grained sands may occur in the lower half of the formation (Plate 6).
- o Conglomeratic and grit lenses occur near the base of the formation; they are seldom over one meter thick and always grade into a sandstone (B50 near drill hole 75-5 Map 2).
- o The upper contact of the Gething has not been intersected in drilling completed by Esso Resources. Two drill holes previously completed by Pan Ocean in 1976 drilled through the Moosebar and Bluesky into the Gething Formation. One of these holes was faulted and encountered Moosebar at the top and bottom of the hole (DH75-6).
- o If the upper contact of the Gething Formation is not intersected in drilling or located by surface mapping, correlations and stratigraphic depths within the Gething are difficult to determine.
- o In the northern end of the property, the upper contact of the Gething may be faulted in several places; a faulted contact (?) has been observed in outcrop on Beaver Creek (Map 1).
- o The lower contact of the Gething Formation is not well defined because of the similarity of the lower Gething and Dresser Formations and the lack of marker beds.
- o The Gething Formation is approximately 450 m thick.
- o (Refer to Geology Maps, Figures 7-13).

2.2.4 Dresser Formation

- o The description of the Dresser Formation is derived from field exposures and from drill hole observations at the top of the formation.
- o The upper contact of the formation has been intersected in drilling and is best defined on geophysical logs.
- o Lithologic variations may be seen in the geophysical log responses between the Gething and Dresser Formations.
- o The cyclothems in the Dresser comprise thicker, coarser and more frequent sandstones than the Gething which result in blockier log responses.
- The top of the formation has therefore been picked as the uppermost coarse sand of the sandstone dominated sequence.
- O A coal seam occurs within or close to this first coarse sand unit (DH75-5, 80-1, 81-1).
- o The coal seam is seen in outcrop at D006. A conglomerate bed occurs below the coal seam; the continuity of this bed is not known.
- o The upper contact of the formation is poorly defined in outcrop.
- o As with the other formations, air photos and topographic breaks in slope are often used to help determine the formational contacts.

- o Conglomerate lenses occur throughout the Dresser and Lower Gething Formations (Plates 8 and 9).
- o The finer components of the cyclothems are more irregular, thinner and incomplete than in the Gething and Brenot Formations.
- o Coals and carbonaceous mudstones are not well developed, and result in generally barren cyclothems.
- o The Dresser Formation is extremely variable within the Falling Creek Property.
- o Extremely coarse conglomeratic beds are present in the southern portion of the property; along Hasler Creek road, in Hasler Creek, at the junction of Hasler and Judith Creeks, and in outcrops in the forest burn area just above Susan Creek (Map Sheet #2).
- o These conglomeratic beds are interbedded with grits and coarse to fine-grained sandstones in thick cross-bedded channel deposits.
- o Further north, in Le Hudette Creek, the Dresser is less conglomeratic, but grits and coarse to fine sands are still interbedded with pebble layers in large channel sands (Plates 10 and 11).
- o This suggests that the coarse phase of sedimentation within the formation appears to be more conglomeratic near Brazion, Hasler, Susan and Judith Creeks in the southern portion of the property; the conglomerates became less dominant along strike to the north.

DRESSER FORMATION

PLATE 8: Outcrop D218

Conglomeratic sandstone unit in Dresser.

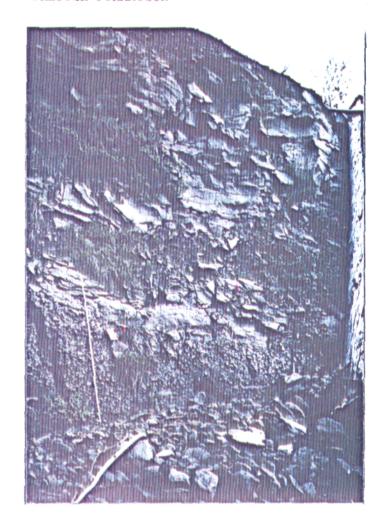


PLATE 9: Outcrop D218

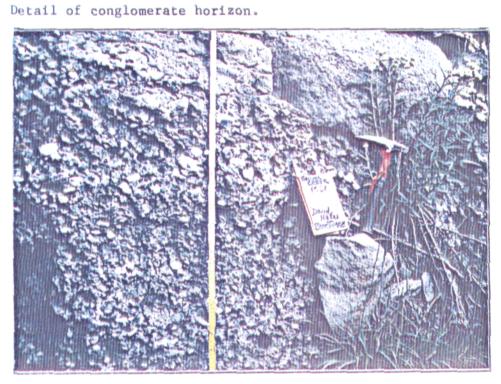


PLATE 10:

LeHudette Creek looking northwest: Ridge on horizon is the west limb of the Bickford Anticline consisting of Montieth and Beattie Peaks Formations. Faulted core of anticline is marked by change of slope. Brenot Formation (wooded slopes) and Dresser Formation (thick exposed ribs) in foreground.

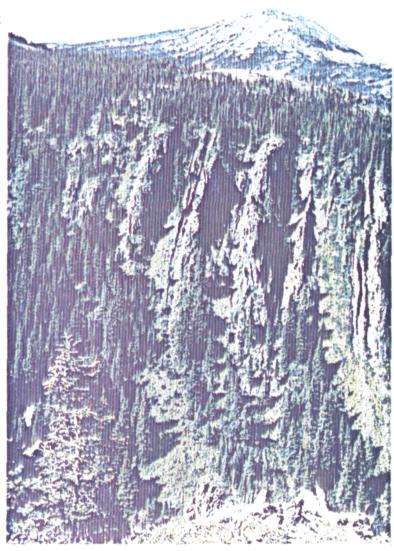


PLATE 11:

Resistant ribs of Dresser Formation



- o The Cadomin Formation should not be considered equivalent to the conglomeratic beds in the Dresser Formation, as the beds are discontinuous and interbedded throughout the formation and were probably desposited in different sedimentary facies.
- o The Dresser Formation's estimated thickness is 300 m.
- o (Refer to Geology Maps, Figures 7-13).

2.2.5 Brenot Formation

- o The Brenot/Bickford Formation is not known to outcrop within the property (Plate 10).
- o The formation may be seen in creeks and road cuts immediately adjacent to the property.
- o The Brenot Formation has well-developed regular cyclothems, but is subtley different from the Gething and Dresser Formations.
- o The formation comprises very fine to fine-grained sandstones, siltstones, mudstones, carbonaceous mudstones and coal.
- o In general, sandstones are very dirty with interlaminated silts and sands; grits and coarse sands are exceptionally rare. Carbonaceous plant fragments are noticeably absent and coal seams are not as well-developed as in the Gething.
- o The regular cyclothems may be interrupted by thick mudstone intervals (about 6 m thick), or sandstone beds (about 4 m thick).
- o The thickness of the formation is estimated to be 275 m.
- o (Refer to Geology Maps, Figures 7-13).

2.2.6 The Moosebar Formation of the Fort St. John Group

- o The formation is an important stratigraphic marker in the Pine Pass area.
- o It is exposed in two outcrops in the northern end of the Falling Creek property.
- o Much of the heavily treed, gently rolling terrain along Falling Creek is believed to be the Moosebar Formation.
- o This is substantiated with a drill hole (75-2) which intersects 295 m of Moosebar mudstones.
- o The Moosebar/Gething contact is thought to be faultrepeated in a number of places in the northern end of the
 property (Plate 12). DH75-6(Map #1) intersects a faulted
 Moosebar/Gething contact. Outcrop L80 (Mpa #1) is also
 considered to be a faulted contact.
- o The formation is best exposed in outcrop outside the property.
- o From observations, the formation may generally be described as a monotonous, indistinctly bedded, dark grey mudstone.
- o Occasional silty horizons, concretions and fossil bivalves are observed.
- Outcrops are heavily broken and rubbly, and may be ironstained (Plate 13).
- o Fine grained sandstone outcrops rich in bivalve fossils are found northeast of the property (especially in Forgotten Creek). These sandstones are believed to be at the top of the Moosebar.

MOOSEBAR FORMATION



PLATE 12: Faulted Moosebar/Gething Contact in Beaudette Creek, northwest of Falling Creek Property.



PLATE 13: Outcrop B139 in Phillip Creek
Moosebar Formation - note broken, rubbly nature of mudstone.

- o The Moosebar Formation has not been intersected in drilling completed by Esso Resources.
- o The Moosebar is a significant marker for correlations at the top of the Gething, and seam depth calculations from the top of the Gething.
- o The Moosebar is approximately 300 meters thick in the Pine Pass area.
- o (Refer to Geology Maps, Figures 7, 8, 12).

3.0 ENVIRONMENT OF DEPOSITION

The Cretaceous age sediments of the Gething and Dresser Formations are part of the thick clastic wedge that developed from late Jurassic to early Tertiary time in northeastern B.C. and northwestern Alberta. As previously stated, these formations contain conglomerates, sandstones, siltstones, mudstones and coals.

These coal measures dictate specific depositional environments. The depositional environment associated with coal must be free of eroding currents and must maintain vegetative accumulation for long periods of time. Economic coal seams 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 varied flow regimes. Grits and conglomerates are associated with alluvial fan deposits and braided river plains. To accommodate these extreme environments within 1000 meters of section, a complex interaction of the factors controlling facies distribution is required.

Progressive, but sometimes sporadic deformation of the Cordillera resulted in infill and subsidence of the developing foreland basin. The sediments of the Gething and Dresser Formations were derived mainly from the developing mountains to the west. The formations may broadly be described as a fining upwards cycle. The high variability of the coarse member (Dresser Formation) suggest rapid variation in sediment supply, flow regime and sedimentary processes. The upper part of the Gething Formation culminates the fining upwards cycle, indicated by the increased presence of coal seams.

The tectonic and sedimentation processes of the Dresser and Gething Formations are thought to be analogous to 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 sands, finely interbedded and crosslaminated sands, silts, and muds are interpreted as various components of a deltaic complex.

The Gething Formation is overlain by marine mudstones of the Moosebar Formation, which were deposited by the Moosebar Sea. The advancement of the sea was in response to increased subsidence of the foreland basin and a rapid decrease in sediment supply.

4.0 STRUCTURE

4.1 REGIONAL STRUCTURE

Progressive deformation of the Canadian Rocky Mountains from west to east resulted in variations in the intensity and style of deformation. The northwest-southeast trending physiographic subdivisions of British Columbia and Alberta generally coincide with the Rocky Mountains structural subprovinces.

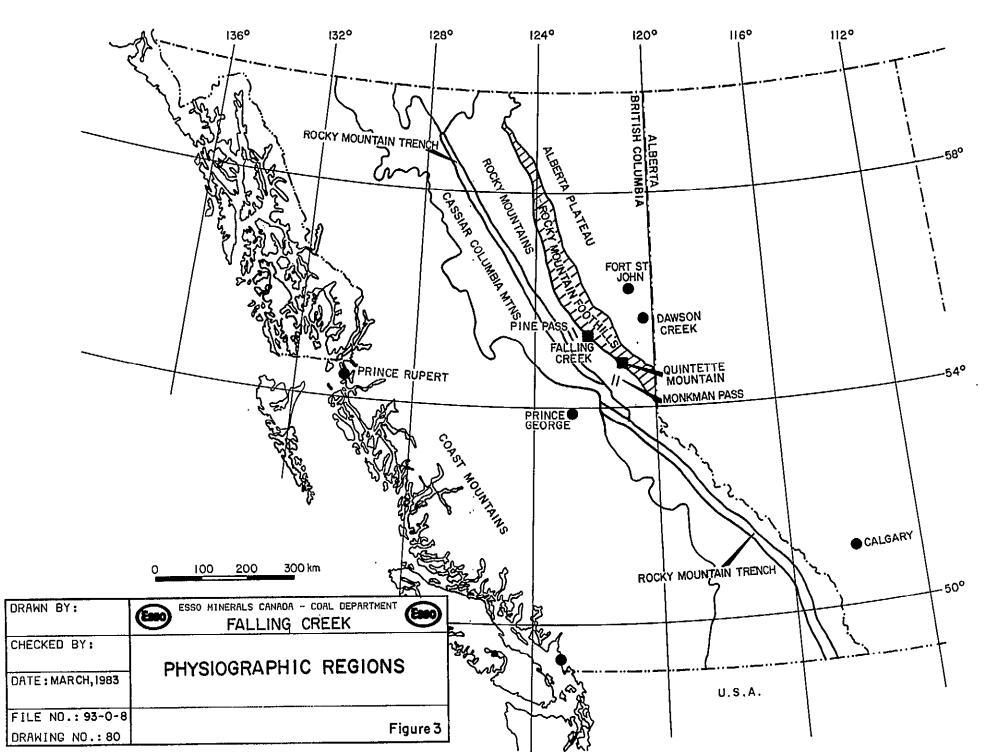
The Falling Creek property is situated within the Rocky Mountain Inner Foothills subprovince (Figure 3). This subprovince is characterized by strongly folded, faulted and disturbed rock. Deformation is more obvious and intense to the West in the Front Ranges and less developed to east in the Outer Foothills.

The structure of the Inner Foothills subprovince has been described by Hughes (1967), Thompson (1979) and others. general, folding is the major structural element of the inner Minor reverse (thrust) faulting occurred as the foothills. folds developed. Large stratigraphic displacements occur along regional reverse (thrust) faults; these faults occur less frequently than in the southern Rocky Mountains. fold-dominated style of deformation (rather the fault-dominated of the southern Rockies) may be due to the greater proportion of incompetent units within the clastic wedge succession (Thompson 1979).

4.2 LOCAL STRUCTURE

4.2.1 Introduction

The major structures in the area from west to east are: the Bickford Anticline, the Fisher Syncline (Plate 14), and the



4-2



PLATE 14: Looking South down Falling Creek Valley

Bickford Anticline forms LeHudette Ridge to the west (right hand side). Fisher Syncline in centre, with Falls Mountain on eastern limb of syncline (left hand side). Falling Creek Property in middle distance. Pine River with railway line in foreground of the valley.

Pine River Anticline. These three, though well defined to the north, all die out in the centre of the property. This coincides with a slight change in regional strike to a more The distances between the medians of the east-west trend. structures are greatest at this point and a slight fanning out is recognized to the southeast. The Bickford Anticline is thought to plunge southwards and die out before reaching Brazion Creek. The Fisher Syncline broadens and loses its identity with faulting in the south portion of the property, while the Pine River Anticline narrows southwards along the property's eastern boundary and also loses identity in a poorly exposed region of complex folding and faulting south of Hasler Creek.

4.2.2 Folds

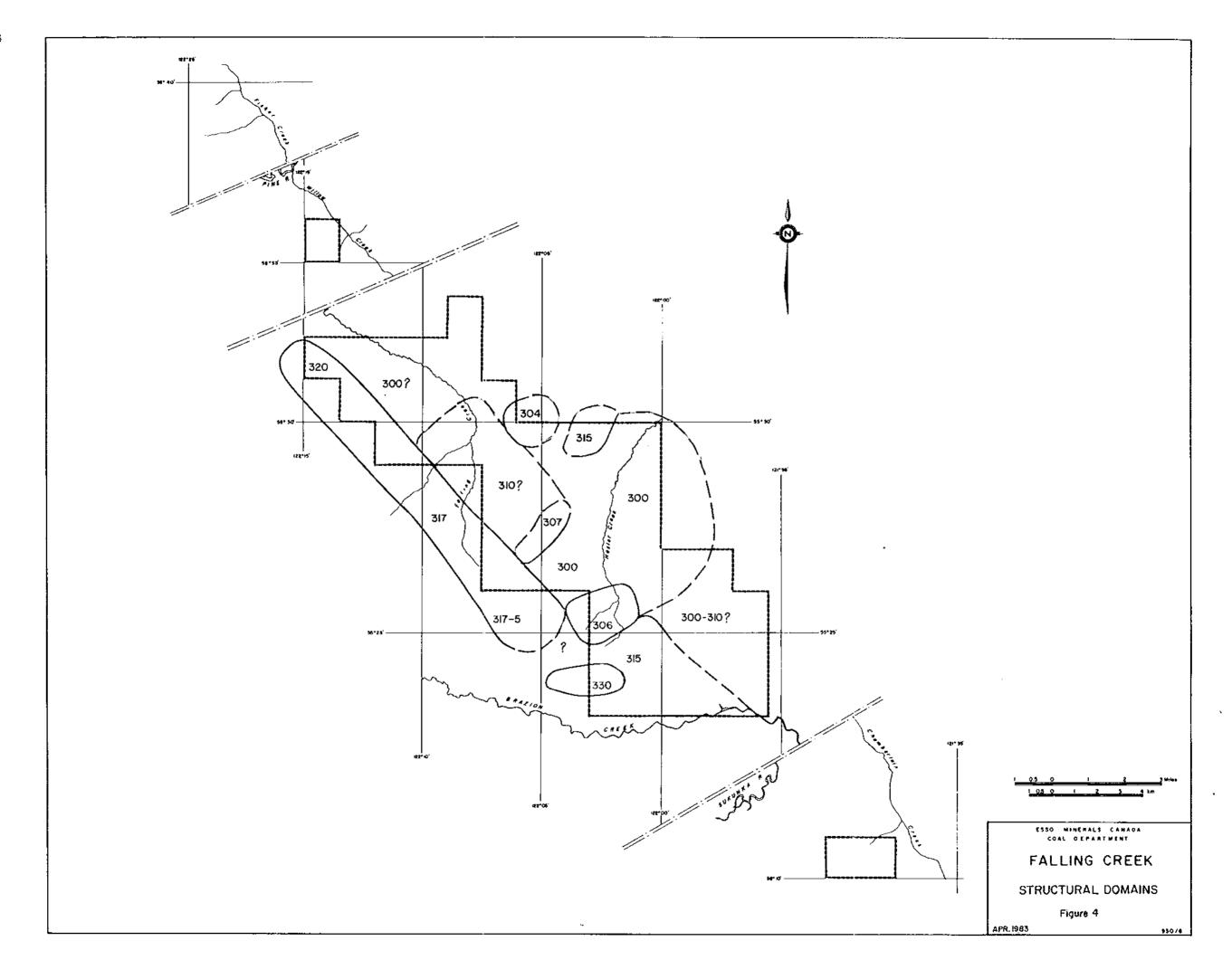
The most common structures seen in outcrop are folds. They are commonly angular and (frequently) asymmetrical with inclined axial planes. The beds generally retain their original thickness and often form chevron and concentric folds. Excess volume developed in the limbs or core of concentric folds may be accommodated during the development of the fold by: 1) reverse (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).

These features are present in many of the structures on the property. Fold limbs are faulted, or even overturned and disharmonic folding (m scale), slickensiding and shearing are generally associated with the folding. Cross sections and correlations have been used to determine the significance of the features. Viewed in relation with other stratigraphic and structural data, minor faults and drag folds of outcrop scale are generally small scale structures congruent with larger scale folds (cross sections, Figures 16-29).

Commonly, important structural features remain unexposed. Changes in the orientation of fold axes and the culmination of fold pairs along strike have been noted in the field (Bickford Anticline, Fisher Syncline). Culmination of folds, reduction of wave lengths and variations of fold pairs along strike may be explained by en echelon folding (Dahlstrom 1970, Fitzgerald 1968). In theory, anticlinal features consisting of several stacked anticlines and separated by faults or zig zag patterns of anticline/syncline pairs are common styles of en echelon folding. These fold configurations have not been recognized in field mapping.

Data from previous years has shown us that local variations of strike and plunge occur throughout the property. Realizing that our cross sections could be crossing different structural domains, we attempted to define the domains (Figure 4).

The property was broken into small areas based upon outcrop data. Numerous stereonets were generated from outcrop orientations and dipmeter readings. With the use of stereonets, domains were outlined. In areas with sufficient outcrop data, domains have been defined with confidence; where data is sparse, the domains are ill-defined and based on data from individual creeks. Plunges were found to be variable with inconsistent plunge directions and were not used in calculating domains. Although the folding may not be competely cylindrical (the conical angle is estimated at less than 10°), for the purposes of the cross sections and domains it was assumed to be so.



The data naturally divided into two ranges, where folding averaged 315° and 300°. Between these major domains intermediate domains were defined (304, 307, etc.). structurally complex area, the trend of the folding changed dramatically, trending 330° and plunging 6.7°. (Forest Burn cross section, Figure 27). This area of high ground on the southwest edge of the property may be anomolous because of the sharp change in fold direction from 300° to 315° on either The folded stratigraphy may be involved side of the domain. in a "room problem". Perhaps an excess volume of rock in the hinge area between the two domains resulted in highly contorted and anomolously oriented beds. Further work will be required to increase the level of confidence of the respective The trend and view of observation of projected points on each cross section is consistent within its respective domain (Table 5).

4.2.3 Faults

Faults within the property occur on several scales with variable displacements. The faults on the cross-sections and maps have been inferred because the exact location, displacement and hade are interpretive. Most of the faults on the property have been inferred as steeply dipping thrust (reverse) faults. Although many faults have been observed in the field, great difficulty was experienced in determining foot wall and hanging wall relationships and displacement. The thrust faults dip both southwest and northeast (cross sections, Figures 16-29).

Regional faults with hundreds of meters of displacement have been mapped approximately parallel with the regional strike and are continuous for many kilometers along strike. Two regional faults bound the property on the east and west and juxtapose rocks of different formations against one another. The displacement may vary along the length of the fault.

TABLE 5
COMPUTER GENERATED CROSS SECTION DATA

SECTION		IGIN FM North = y	DIREC	AND PLUNGE CTION OF RVATION	SEARCH WIDTH	LENGTH OF SECTION		ME OF CTION	NAME OF PLOT FILE .
	,,,,,,,	40000		^^	* 4.00				
Cirque Lake	48800	48000	320°	0°	1400	3000		Cirque	LKM. Cirque.Plot 01
Slippery Creek	46650	51000	318°	0°	1750	5000		Slip	Plotted on line
Hummingbird Creek	50570	47240	317°	0°	600	2400		Humming	CKM. Hum. Plot 01
Phillip Creek	59620	49000	315°	0°	700	2500		Phillip	LKM. Phil.Plot 01
Falling Creek	51460	44950	317°	0°	500	5850		Falling	LKM. Fall.Plot 01
Skinny Lake	52470	43440	317°	0°	800	5200		Skinny	LKM. Skin.Plot 01
Alpine Meadows	54000	43000	317°	0°	700	4000		AM317	LKM. AM7.Plot 01
Sharon Creek 317	54770	42000	317°	0°	600	4100		SC317	LKM. SC7.Plot 01
Sharon Creek 310	57830	44810	310	0°	700	5400	LKM.	SC310	LKM. SC310.Plot 01
Alpine Meadows	56970	45760	310°	0°					
Diamond Lake	56000	40470	317°	0°	1300	3800		Diamond2	LKM. Diamond2, Plot 01
Exposure Creek	43200	58630	300°	0°	600	2100	LKM.	Exposure	LKM. Expc.
			Drill		82-7, 81-1,				
Exposure Creek Plus	59680	45055	300°	0°	600	7000		Exp.Plus	Plotted on line
Steep Creek	59270	42000	300°	0°	600	8000		Steep	LKM. Steep C
Folding Creek	60000	40900	300°	0°	600	9300	LKM.	Folding	LKM. Folding
					82-5, 82-2,	81-2, 74-1			
Part Folding	62000	43220	302°	0°	1000	3500	DFH.	Part.Fold	Plotted on line
Cut Block	57460	43200	307°	0°	400	3500	LKM.	Cutblock	LKM. Cutblock.Plot 01
Forest Burn	59130	39000	330°	6.7°	1200	4100	LKM.	Forest	LKM. Forest.Plot 01
			Drill	Holes $82-4$,	82-13, 81-3				
Brazion Creek	6000	36540	315°	0°			LKM.	Sect.Hold	Plotted on line
			Drill	Holes 82-3,	82-12			Data	
Susan Creek	62100	36000	315°	0°	1100	9000	LKM.	Susan	LKM. Susan.Plot Ol
Hook Creek	56320	49000	304°	6°	not	not	DFH.	Hook . AR	Plotted on line
					recorded	recorded			

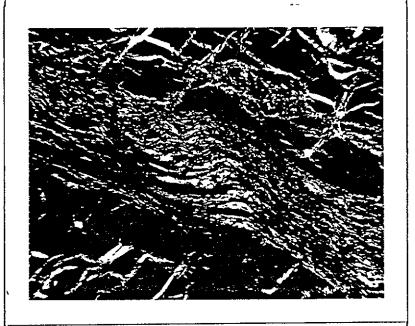
The most common faults inferred within the property are small scale faults associated with folds. These faults occur in response to the excess volume accumulated in the cores and limbs of the folds during deformation. Anticlines within the property may often be thrust faulted, with the fault plane dipping in the same direction as the bedding. The displacement along these faults may range from less than ten meters to over one hundred meters, depending on the scale of structure involved. These faults parallel the folds and have commonly been inferred as a result of stratigraphic problems within the property (cross sections, Figures 16-29).

With additional work, it may be shown that some of the faulting may accommodate en echelon folding, allowing for the change in orientation and discontinuity of some of the folds and faults. At present, some faults running oblique to strike have been explained as splays off larger faults.

The surface expression of a fault may often be a covered interval. Faults have been defined mainly through cross-sections and relating surface data with drill hole correlations, dipmeters and stratigraphy. Air photos have been used (especially in the northern portion of the property where there is no outcrop) to relate surface expressions which may be fault traces.

4.2.4 <u>Small Scale Structures</u>

During deformation, stresses are often relieved along the structurally weakest planes. The deformation of the Crassier Group coal measures resulted in shearing, slickensliding and millimeter scale faulting within coal seams and mudstones (Plates 15, 16, and 17). In some coal seams, the original bedding and cleat has been obliterated by pervasive shearing.



EXAMPLES OF SMALL SCALE STRUCTURES IN COAL SEAMS

photomicrograph (x50)

- calcite deposition (light material) within coal (black).
- displays folding (along bedding planes) and fracturing roughly perpendicular to bedding.

PLATE 15

photomicrograph (x200)

folding deformation along specific layers within coal this is suggestive of bedding plane slip (calcite light gray, coal off white to white).

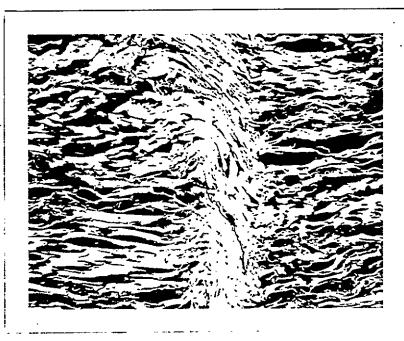


PLATE 16



PLATE 17

photomicrograph (x200)

deformation has been severe enough to induce minor fracturing (calcite - light grey, coal - off white to white). More competent beds may also have small scale features of deformation (Plate 10). Pebble conglomerate lenses have been found with sheared chert pebbles and multiple slickenside surfaces. Small fractures and faults (mm scale) are commonly filled with calcite.

Small faults or fracture zones (meter scale) may act as aquifers. These become problematic when drilling if they produce substantial volumes of water.

4.2.5 Discussion

As stated in last year's report, the least structurally deformed area is in the southern portion of the property. Dipmeter values from the 1982 drill holes have indicated gentle dips (under 20°).

From the correlations of the drill holes, a fault has been found between DH-81-3 and 82-12 (Forest Burn and Brazion Creek cross sections, Figures 27 and 28). This fault up throws the Dave Seam 100 m, bringing it to within a few meters of the surface. This introduces a larger target area and increases the reserves of the Dave Seam in this area.

Elsewhere on the property the folding is tighter and small faults are more common. An understanding of the style of deformation is imperative for the exploration of the property. In the northern end of the property, where little outcrop data exists, the location of the folds and faults is highly interpretive. The success of a drill program, however, is entirely dependant on the interpretation of the geology and structure in that area.

More drilling is needed to further define the gentle structures in the south and to indicate what kind of structures are present in the north.

5.0 COAL

5.1 INTRODUCTION

The 1982 drilling program has solved a number of questions about the stratigraphy and allowed the continuous correlation of at least five main coal seams (Table 7, Goal Seam Profiles, Figures 30-35).

At the end of the 1981 program, some difficulty was experienced in correlating DH 81-2 and DH 81-3. They were considered to be in a similar part of the section, but the two drill holes were not well matched. In 1982 we could see that the split seam in DH 81-3 was in fact correlatable with the Dave Seam in DH 81-2. The 1982 drill holes completed in the area of Exposure Creek were very difficult to correlate. As well, some questions still remain concerning the correlations between DH 82-3, 82-12 and 82-13 with the rest of the drill holes south of Folding Creek.

Overall, we have gained an understanding of the stratigraphy and the major coal intervals in the Gething Formation (Table 7). Little attention has been paid to the lowermost Brenot (Bickford) and Dresser (Cadomin) Formations. shows the coal seam stratigraphy underlying the Falling Creek The lowermost seam, known as the Contact Seam, is considered to be near the top of the Dresser or Cadomin Forma-The remainder of the seams are all within the Gething tion. The uppermost Brenda seam is approximately 50 M Formation. below the Moosebar/Gething Formational contact. This contact has never been identified in outcrop or in drilling completed by Esso, however, the Brenda Seam has been correlated with a thick seam seen in Pan Ocean drill holes H-1 and 75-4. Both these holes contain a Moosebar/Gething contact some 50 M above the correlatable Brenda Seam.

5.2 COAL SAMPLING

Coal samples from the 1982 exploration program were recovered from drill cuttings and one core. Seam depths and profiles were not known prior to sampling. Samples from drill chips were collected on a bulk recovery basis from the return air (or air and water, if below the water table). The sample was channelled through a cyclone and collected in plastic bags.

Above the water table, sample recovery was good, but roof, floor and partings were frequently included in the samples. Below the water table, recovery was poor and the cyclone proved inefficient.

The coal core sample was close to surface and partially oxidized. Recovery of the coal seam was 69%. The complexity of the geology within the property makes the targetting of any seam risky. To minimize the costs in terms of depths drilled and in time spent recovering core, coal seams at shallow depths are targetted.

Samples for vitrinite reflectance measurements were taken from every bulk sample (Tables 9, 10).

Representative profile samples from the two thickest and most completely recovered coal intervals from the core were taken for maceral analyses (Table 11).

5.3 COAL SEAMS

This section will address in ascending order those seams which are correlatable between drill holes (Table 7).

The Contact Seam is the lowest seam intersected within the Gething Formation at 450 meters. It is characterized by a single strong deflection in both the Gamma and Density Geophysical log traces. The seam was cored in DH 81-1 and is described as dull lustrous with bright bands. The total seam thickness is between 1.5 and 2 m with no partings. In a suitable structural setting, this seam might be an attractive target, but it is separated from the Rat seam by 191 meters (Coal Seam Profile, Figure 35).

The High Gamma Seam is important as a stratigraphic marker horizon. It is a thin seam (< lm thick) with a characteristically high gamma response. This response is probably due to physical properties of the seam floor, however, this has not been thoroughly investigated.

The Rat Seam averages 2 meters of coal over a 3 meter section. The seam usually contains two to three partings. The geophysical log deflection is generally less distinct than with other seams and is probably a function of the poorer quality coal of the seam. In the 1982 drill holes, the seam appears to be best developed in the Folding Creek area and may be seen in outcrop at H160 (Coal Seam Profile, Figure 34).

The Dave Seam averages 2.60 meters of coal over an interval of 4.0 meters. The seam is characterized by a clean lower bench which may be over 2 meters thick. A highly parted interval of coal and carbonaceous mudstone comprises the upper portion of the seam. The Dave Seam is well developed in the Folding Creek area and is also correlated with DH H-1, north of the Falling Creek licenses. This suggests lateral continuity, but rapid local variations were noted in the 1982 drill program. This seam is approximately 240 meters from the top of the Gething and 17 M above the Rat Seam (Coal Seam Profile, Figure 33).

The Twin Seam comprises two well-defined coal seams separated by a carbonaceous mudstone parting. A small rider seam occurs approximately 2 meters above the main seam but this has not been included in the thickness calculations. The seam averages 3.3 meters over a 4 meter interval. The Twin Seam is 94 meters below the Brenda Seam and approximately 80 meters above the Dave seam. The Twin Seam occurs within an interval which contains seams up to 1 meter in thickness. This zone may prove to be a worthwhile target with further drilling (Coal Seam Profile, Figure 32).

The Brenda Seam is stratigraphically the highest correlatable seam intersected on the property. The seam averages 10.5 meters thick with 6.5 meters of coal. The full seam has been intersected in DH 82-2; the top bench of seam is missing in DH 82-11 and DH 81-2. It is exposed in outcrop at B048, B049 and L075 (Table 6). The seam is thought to be 50 meters from the top of the Gething Formation, based on geophysical log correlations.

Rapid lateral changes in the detailed character of this seam are known to exist, but the continuity of the seam across the property and within the Pine Pass Area allows this seam to be an important stratigraphic marker and target seam (Coal Seam Profiles, Figures 30 and 31).

5.4 ROOF AND FLOOR

The seams are nearly always associated with carbonaceous mudstone in the immediate roof and floor and in the parting material. No swelling clays or bentonites have been encountered and drill holes have proven to stay open over long periods of time.

The coal measures are interbedded with some very hard, well-indurated sandstones and these would certainly require blasting in order to remove them for coal extraction. Their position with respect to the coal seams should be considered in any mine plan.

5.5 RANK VARIATION

The ranks of the Falling Creek coals all fall in the high volatile A to medium volatile Bituminous range. Variation in the rank is likely to occur across the property and with depth of burial. Regional studies show that the rank of the Gething coals increases westward from the plains to a maximum at the boundary with the Foothills structural belt and falls again as the front ranges are approached (R.H. Karst and G.V. White, 1980-81). Other studies indicate considerable rank variation with depth (W. Kalkrenth, 1982). Vitrinite reflectance which particularly measurements, are sensitive rank indicators, have been carried out as a standard procedure on the coal samples from Falling Creek. With the assistance of Jim Allan (Esso Research laboratories), rank variations will be monitored and reported. Data presently available is considered insufficient to begin rank isograd maps.

5.6 COAL QUALITY

The highest FSI button recorded to date from the Falling Creek coal samples is 3. Usually the buttons range between 1 and 2 (Table 11). Since the tests are on raw coal only, the possibility of good quality coking seams or benches within seams still exists, but in general the property is considered a thermal coal resource. This conclusion is well supported by our neighbouring competitors. It appears that there are certain characteristics of the maceral constituents which prevent the coal from coking well. These are not clearly understood and, as yet, few maceral analyses have been carried out.

5.7 MINEABILITY

The coal reserves on the Falling Creek licenses are being considered only for the surface mining potential. The structural geology is very complex and steep dips are the norm. Minor folding and faulting within the more clearly defined major structures is common place. Any surface mine operation is expected to be small scale. The mine could possibly consist of a number of small pits (perhaps three, 30 M tonnes each) linked to a central processing plant. mine plan and extraction process will be relatively complex, most likely utilizing a truck and shovel operation. Exploration drilling to at least 100 m spacing will be required prior to any development planning and continued infill drilling will be required as mining procedes. Close geological control will be an essential part of the mining operation.

The area is accessed by a forestry trunk road through the center of the property. The trunk road connects the area with the BCR line 25 km away which gives access to the coast via Prince George and Prince Rupert.

The Peace River coalfield in northeastern B.C. is a development area and is supported by the B.C.Government.

TABLE 6
Summary of Coal Seam Descriptions

		cation	4545		Thick						
Seam	East	UTM North	(M) Elevation	Strat. Position	(metro Gross	es) Net	Partings	R.I.	Roof .	Floor	Comments
вооз	61920	49760	0876		1.08	. 88	20 cm ooli- tic like concretion		slst/sst	coaly mudst	dull banded sheared
B018	61235	41380	1155	Twin	2.69	2.59	4				
B021	61198	41435	1170	Twin	2.06 4.22	1.20 4.02			Carb. mdst & sst	v. carb. mdst	
в023	61195	41425	1168	Twin	1.17	1.17			mdst	mdst	brightly banded
B024	61130	41500	1173	Twin	1.2	1.2			carb. mdst	carb. mdst	
в036	60630	42157	1177	Brenda	•91	.86	sst.		sltst.	m. gr. carb	
в045	60776	42373	1141	Dave?	.82	.82			sltst. mdst	mdst	dull, dirty
в048	60320	42328	1188	Brenda	5.1	3.5	v. carb mdst	0.95 R043= 1.01	v.f.gr. sst	carb sltst	
. во49	60309	42302	1193	Brenda	2.0	2.0	Tonstein mdst	0.98, 1.08 1.06	obsc.	carb. mdst sltst.	
B048 &	49 Comb	ned as B	renda seam		8.5	5.5					
в059	59709	44234	1201	D or R	3.6	3.6		1.32, 1.36	v.f.gr. sst	carb. mdst	
B062	59466	44255	1176	Rat?	2.8	2.8		1.04, 0.97	obsc.	obsc.	
в073	59136	44055	1190	Gamma	1.83	1.44	mdst		mdst	carb. mdst	dull banded
в083	59089	43940	1188	Gamma	1.88	.93	mdst		obsc.	carb. mdst	

Summary of Coal man Descriptions

		cation UTM	(M)		Thick:						
Seam	East	North	Elevation	Strat. Position		Net	Partings	R.I.	Roof	Floor	Comments
B119	58770	43765	1160	D or R	1.0	1.0					may not be in place
B121	58810	43845	1155	D or R	1.9	1.9		ı	obsc.	obsc.	dull-muddy powered coal
B122	58810	43865	1155	D or R	1.5	1.5			obsc	obsc.	may be same as (B121)
B186	62040	44230	1110	Contact?	1.45				carb. mudst	siltstone	V. Sheared
B204	59215	44780	1140	Rat? Seven Sisters	4.0	4.0			f.gr. sst	obsc.	dull, with bright band
B205	59220	44790	1140	Rat? Seven Sisters	1.56	1.56	mdst with carb.strgrs		obsc	carb. mdst	dull with bright band
В206	59215	44800	1140	Rat? Seven Sisters	2.24	1.99	carb. mdst		obsc	v. carb.	dull with bright band
B207	59220	44810	1140	Rat? Seven Sisters	.65	65			carb. mdst	carb. sst.	dull with bright band
B208	59225	44815	1140	D or R Seven Sisters	.76	.76			carb. mdst	carb. mdst	dull with bright band
B209	59225	44820	1140	Dave Seven Sisters	2.46	2.11	carb. mdst		obsc.	obsc.	bright & dull bands
B210	59225	44830	1140	Dave Seven Sisters	2.27	1.48	mdst		obsc.	carb. mdst	dull with bright band
B283	59645	47340	1260	L.G.	1.2*	1.2*			obsc.	sltst.	dull

Summary of Coal am Descriptions

	Location UTM		(M)		Thickness (metres)						
Seam	East	North	Elevation	Strat. Position		Net	Partings	R.I.	Roof	Floor	Comments
D006	62940	37926	1033	Contact Seam							
D014	60565	44515	1055	HG or Contact	2.11	2.11			mdst	v. carb. mdst	du11
D047	60270	41655	1271	Rat Zone	•6	•6			obsc.	sltst.	dull
D097	59440	44685	1065	D or R	1.84	1.84					
D133	59480	44796	0957	D or R	2.06	1.76	mdst			coal	
D175	58680	45335	1155	Contact?	2.5	2.28			obse.	obsc.	du11
D305	57235	47495	1190	Lower Geth	1.94	.99			carb. mdst	carb. mdst	bright banded
D306	57290	47455	1175	Lower Geth	4.18	1.54			coaly mdst	carb. mdst	bright banded
D319	57665	42565	1263	Lower Geth(Rat?	1.0					•	
D322	57685	42616	1257	Lower Geth(Rat?	1.0						
D377	60470	41920	1223	BRD?	5.54	4.42	ooltic like concretions		mudstone	mudst, carb & coaly	
D378	61000	41675	1170	Twin	5.05	2.0	2.7m parting	ş Ş	mudstone	mudstone	
н009	63110	39780	1143	Dave	1.2	1.09	mdst carb. sst & sltst	R040 = 1.06	carb. mdst	mdst	
Seam la HO13	60887	42488	1130	D or R	.56	.56			mdst	mdst	mostly bright

Summary of Coal am Descriptions

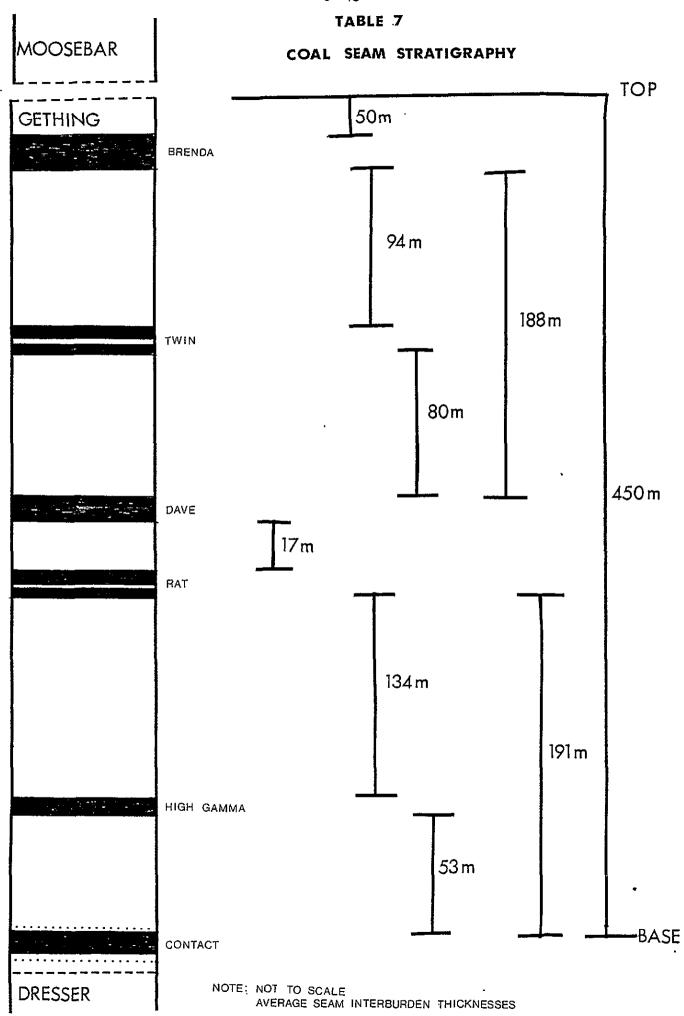
		cation UTM	(M)		Thick						
Seam	East	North	Elevation	Strat. Position		Net	Partings	R.I.	Roof	Floor	Comments
Seam 15 HO13	60888	42490	1130	D or R	.50	.25	boney coal		carb. mdst	carb. mdst	dull, trans to carb. mdst
Seam 1c HO13	60891	42505	1130	D or R	3.0	3.0		,	carb. mdst	carb. mdst	sample taken
Seam 2 HO13	60891	42515	1132	D or R	.7	.7			carb. mdst	sltst.	dull top bright bottom
Seam 3 HO13	60891	42520	1132	D or R	4.96	2.58	mdst & boney coal		carb. mdst	sltst.	
H014	60840	42555	1158	Dave or Rat	3.0+	3.0+		R049 = 1.10	mdst	mdst	
н033	60041	40467	1351	Dave?	1.6	1.6			carb. most	carb. most	
н035	60000	40389	1367 '	Dave?	2.7	2.7			sst.	obsc.	
H041	60515	42605	1200	Twin	1.7	1.6			carb. most	most	top bright bottom dirty
Н049	60325	41840	1220	Between Twin & Dave	.85	.75	boney coal		mdst	mdst	mostly bright
Н052	59995	42975	1325	?	.7	.7	mdst		mdst	carb. mdst	
но74	59100	43670	1208	D or R	3.7	1.7	carb. mdst		f.gr. sst	obsc	deeply weathered mostly bright

Summary of Coal Seam (__scriptions (Surface)

***************************************		cation UTM	(M)		Thick:						
Seam	East	North		Strat. Position		Net	Partings	R.I.	Roof	Floor	Comments
но75	59205	43449	1295	D or R	3.79	1.8	carb. mdst		obsc.	carb. mdst	deeply wea- thered mostly bright
Н85	58160	43160	1270	coal blume							coal blume
н89	58780	43165	1223	Rat	1.2						
н092	58630	42960	1285	Rat	1.5	.9	carb. mdst		sst.	carb. mdst	appears structurally deformed
н260	60250	41595	1275	Rat Zone	3.20	1.94			carb. mdst	rooted carb mudst	soft, deeply weathered dull banded
н261	60265	41485	1295	Rat Zone	.7				silst	silty mdst	
Н262	60725	42432	1160	Twin or Dave	1.87	1.07			carb. silst	mudst	
H263	58630	43345	1180	Rat?	3.06	1.33			carb. mdst	v.coaly mds	
Н264	61128	41515	1168	Twin?	1.47	1.27		·	shaley mdst	carb. coaly	
L040	56942	49870	1144	Twin or Dave	1.4	1.04					
Ľ043	56974	49845	1159	Twin or Dave	.85						
L045	56980	49835	1161	Twin or Dave	.60						
L052	55710	46992	1278	Lower Gething	8.60	.4.70					
L075	60225	42215	1220	Brenda	12.7	7.61	mdst carb. sst & slst				same as (BO49)

Summary of Coal Seam (Scriptions (Surface)

Seam	i .	cation UTM North	(M) Elevation	Strat. Positi	Thicki (metro		Partings	R.I.	Roof	Floor	Comments
L301	57320	46600	1200	Lower Gethin			1 41 41 41		1001	11001	Ommones
L308	58870	51090	0980	Twin?	1.12	1.03	·		siltsone	covered	dull, soft
	30070	31030	0,00	74111	****	1.03			SITESONE	Covered	& crisp
L319	57830	51010	0992		1.5				siltst/mdst	siltsone	very soft & weathered
L331	63455	48550	0938		1.1				mudstone	mudstone	
L367	60690	43820	1061		.7 to				carb. sst	carb. sst	
L371	61710	39348	1115	Dave?	5.33	2.95	mudstone & sandstone		sandstone	v. carb. mudst	deeply wea- thered fault thickened?
X023	57310	44070	1348	Lower Gethin	g .65	,					
м068	52815	46320	1295		1.25				carb. mdst	carb. mdst	v. weathered



6.0 CHAMBERLAIN CREEK LICENSES

ABSTRACT

The Chamberlain Creek Licenses consist of 592 hectares and have been held by Esso Resources Canada Limited since 24 May, 1980.

Geological compilation maps (G.S.C.) indicated that some of the License area was underlain by the Gething Formation which contains thick continuous coals.

The area was visited twice by mapping crews for a few days to determine how much of the Gething formation was present and whether any coal could be found in outcrop. The results from the mapping were negative indicating much of the property was underlain by the Cadomin Formation which has few and poorly developed coal seams.

It is recommended to give-up these licenses.

6.1 Introduction

6.1.1 Objectives

Preliminary mapping suggested that only a small portion of the licenses was underlain by coal bearing strata. A decision had to be made in 1982 to release the licenses or to carry out further exploration. The area was revisited to bring the geological interpretation to a confidence level of decision making.

6.1.2 Location and Access

The two licenses known as Chamberlain Creek are within NTS unit 93 P/4 at 55°10'N Latitude, 121°36'W Longitude. They lie immediately to the west of Chamberlain Creek and the Bullmoose Mountain highland area. The nearest access point is from the Sukunka River logging road which passes about 2 km northwest of the property 65 km south of Chetwynd, B.C.

The property is crossed by two hand cut seismic lines; the first running southeast from the Sukunka River road and the second crossing from southwest to northeast.

The area can be reached by helicopter from Chetwynd in roughly 1/2 hour's flying time.

6.1.3 Geography

The property is situated in the Inner Foothills belt of the Rocky Mountains. The highest point has an elevation a little over 1,550 m and is contained in a ridge maintaining an elevation around 1,520 m running diagonally across the property northwest to southeast. The land slopes from either

side of the ridge to about 1,230 m. The Chamberlain Creek valley to the east is deeply incised while the Sukunka River valley to the north is a broad, flat bottomed feature at an elevation of 730 m.

The tree line in the area is just below 1,520 m so that a small part of the center of the property is alpine meadow and tundra environment while the remainder is entirely forest covered. The underbrush becomes very dense below about 1,370 m, making passage on foot arduous.

6.1.4 Previous Work

These licenses have been explored together with the Falling Creek license block. They were first visited in the summer of 1980 by Bim Waters (et al) who conducted preliminary geological mapping. Prior to this the only known geological coverage is regional map compilations from Geological Survey of Canada and British Columbia Department of Mines aerial photography interpretation.

6.1.5 Work Completed by EMC in 1982

A fly camp was established at a central point on the property and geological mapping was carried out along a ridge to the west and from there further west along the second hand cut seismic line; along the main northwest-southeast trending ridge and down Mosquito Creek to the east as far as Chamberlain Creek, returning southeast again along the second seismic line.

6.1.6 Property Definition

License #		Description Hectares	
		Map 93 P/4	
6400	•	Block J, Units 1, 2, 11, 12 29)6
6401		Block J, Units 3, 4, 13, 14 29	16

6.2 Regional Geology

The property lies within the Inner Foothills structural belt. This belt is characterized by steeply dipping reverse faults whose traces run northwest to southeast and separate the belt into truncated blocks. The structures within each block can be either folded or broadly synclinal and sometimes a combination of these two in synclinorium style.

The faulting is thought to develop in conjunction with folding as compressive pressures increased, though some fault planes may be folded. Most of the major reverse faults are west dipping and probably represent thrust splays coming to surface. East dipping reverse faults are not uncommon and at outcrop scale, tight folding with reverse faulting to the west or east occurs in both the cores and limbs of larger anticlines and synclines. Field data collected from outcrops can be misleading in structural interpretation, the major structures being obscured by minor folding and faulting.

The rocks involved range from Lower Cretaceous to Upper Cretaceous in age and include the following groups in ascending stratigraphical order; Minnes, Bullhead and Fort St. John (D.F. Stott, 1968).

The Minnes Group of this area is subdivided into the lower Montieth Formation and the upper Gorman Creek Formation. In restricted outcrop the Gorman Creek Formation appears very similar to the lower Gething Formation, its position with respect to the Cadomin Formation distinguishing it in the area under study.

At the base of the Bullhead Group is the Cadomin Formation which is thought to represent a hiatus in the sedimentary sequence and to rest unconformably on the rocks below (D.F. Stott, 1961). It is overlain conformably by the Gething Formation, the top of which marks the last terrestrial deposition in a transgressive phase. The mudstones of the Moosebar Formation lie directly above the Gething at the base of the Fort St. John Group and represent a marine incursion. The Moosebar is in turn overlain by the Commotion

Formation representing a regression and a return, for the most part, to terrestrial sedimentation. Younger rocks of the Fort St. John Group rarely outcrop in the area of the Inner Foothills belt under discussion.

6.3 Property Geology

A northwest-southeast trending syncline passes through the extreme northeast corner of the property. The rocks on the property are contained in the southwest limb of this syncline and therefore dip northeast. The oldest rocks are thus found in the southwest and probably belong to the Gorman Creek Formation. The Cadomin underlies most of the property and forms the high ground through the center of the licenses. Rocks of Lower Gething Formation may be present in the northeast corner of the property captured in the core of the syncline.

6.3.1 Stratigraphy

Outcrops of dirty argillaceous sandstone along the seismic line west of the property were included in the Gorman Creek Formation. The sandstones form resistant ribs usually about 5 m thick at regular intervals with intervening covered intervals of 10 m or so. The sandstones are quite variable, usually with argillaceous matrix and medium-grained. Cleaner quartzose sandstones and finer finely-laminated sandstones were also present. Off the property to the northeast Chamberlain Creek and Mosquito Creek are thought to contain Gorman Creek strata. At least one 50 cm coal seam was found of hard, brittle, dull-lustrous coal with good cleat.

A very continuous outcrop of conglomerate is present on the dipslope side of the ridge across the center of the property. The conglomerate unit is largely matrix supported by a medium to coarse sand, consisting of sixty percent quartz and forty percent chert and other dark fragments. The conglomerate clasts are composed of chert with a few of quartzite. The chert is mostly grey in colour varying from pale grey through to very dark grey. Occasional pink and green hues are seen. The clast size is mostly in the 2 - 5 cm diameter range. Some may be up to 10 cm diameter and there is every grade down to the sand matrix.

The unit, which is roughly 3 m thick, shows planar beds on some surfaces and cross-bedding on others. In some outcropping blocks these surfaces are almost at 90° to each other and the bedding appears to show paleo current direction to the north or northeast. The unit also includes lenticular beds of sandstone.

This unit was initially mapped as the Cadomin, all the rocks above being included in the Gething and all those below placed in the Gorman Creek Formation. However, it became clear in drawing the geological map and cross-sections that more than one conglomerate unit is present. Since time did not permit the walking out of each outcrop and ridge, the strata were grouped together largely on the basis of air photo interpretation. Thus an interval about 250 m thick has been traced on the map and cross-sections as being roughly equivalent to the Cadomin and upper Gorman Creek Formation. It includes conglomerates, many sandstone units and a number of conglomeratic sandstones, all interbedded with mudstones and siltstones of minor proportions. It includes a notable outcrop at M007 which is a large cliff. The exposure is of sandstone about 15 m thick. The sand is medium upper in grain size subangular to angular and the unit is largely cross-bedded though very massive in places. The unit contains coarse and conglomeratic lenses, especially towards the base.

It was not possible in the mapping to clearly define a top and a base to the Cadomin formation, unless the formation be confined to the one conglomerate unit less than 5 m thick (which can be confused with others in the section).

Outcrops of the Gething Formation are confined to the middle reaches of Mosquito Creek which flows northeast off the property into Chamberlain Creek. These outcrops occur through the core of a syncline where the structures are very complex making the succession difficult to study.

The formation where it outcrops consists of a number of sandstone ribs interbedded with finer lithologies including siltstones, mudstones and carbonaceous mudstones. Coaly material and coal stringers are common, especially associated with carbonaceous mudstone beds. The sandstone units are not usually more than 5 m thick and may be fine-grained and finely laminated, or medium-grained or medium to coarselygrained and gritty or conglomeratic in places. The coarser grain sizes are usually cross-bedded.

6.3.2 Structure

The licenses are located on the southwest limb of a syncline which is truncated in the extreme southwest corner of the property by a fault. This fault is probably a high angle reverse fault upthrown on the southwest side. A large drag fold is present immediately to the northeast.

The southwest limb of the syncline dips gently northeast at less than 20° until it approaches the syncline axis. Here the beds steepen to more than 40° in places. The northeast limb of the syncline is steeply dipping and contains many subordinate folds and faults which are exposed in Mosquito Creek off the property to the northeast.

The syncline has a marked trend change along its length and turns almost due west north of the property.

6.3.3 Coal

The thickest coal seam found in outcrop is 1.6 m of coal in 1.9 m of section. This occurrence is on Chamberlain Creek west of the licenses at W224. The coal is probably in the lowermost Gething Formation. Although the structure probably takes this seam through the northeast corner of the property it cannot be considered an exploration target. Other coal showings were few and much thinner. Thin coals exist

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throughout the section from the upper Gorman Creek Formation to the top of the Gething Formation. The thickest and most continuous seams, however, are found in the upper part of the Gething Formation and this is not found on the property.

6.4 Recommendation & Conclusions

The property area is so small that only a very thick seam or package of seams would make it an exploration target. Very little coal was seen on the property in outcrop and the reconnaissance mapping suggests that it is largely underlain by the Cadomin Formation. The Cadomin does not contain large quantities of coal. These two licenses should be dropped.

7.0 COST STATEMENT

TABLE 12

Activity	Vendor		Amount
Drilling	Can West Drilling	\$68,795.00 22,790.05	
	Chetwynd Building Supplies Ltd.	49.55	\$ 91,634.60
Logging	BPB Instruments	\$34,380.17 2,080.00	\$ 36,460.17
	•	2,000.00	\$ 50,400.17
Bulldozing	Peace Dozing & Contracting	\$ 246.00	
		7,966.00 9,328.00	
		17,980.00 5,384.00	\$ 40,904.00
Camp Costs .	Foster's Seed & Feed	<u>.</u>	\$ 330.00
Travel	Employee Accommodation Meals & Transport	\$ 5,149.00 \$10,142.68	\$ 15,291.68
			•
Misc. Materials & Supplies	Northern Metal Sales Beaver Lumber	\$ 302.21 \$ 28.11 \$ 125.00	,
	Welders Supplies Ltd. Caldraft	\$ 381.48	•
	ProWestern Plastics	\$ 59.50 220.14	\$ 1,116.44
Fuel	Chetwynd Motors	\$ 1,252.45	
	Viking Helicopters	(60.00)	\$ 1,192.45
Communication	BC Telephones	\$ 303.11	
	Alberta Government Telephones	\$ 1,175.63	\$ 1,478.74
Mine Geology	J. E. Hughs - Consulting		
	Geologist		\$ 420.00
General Compilation	Hardy Associates (1978) Ltd.	\$ 4,743.21	
& Studies	indicate the second of the sec	\$ 2,076.75 \$ 76.70	\$ 6,896.66
	•	y /0./0	Q 0,050.00

Activity	<u>Vendor</u>		Amount			
~Vehicle Rental	Hertz Rent A Car Rentway Canada Ltd. Canadian Freightways EconoCar Canada	\$ 600.60 4,421.37 154.10 	\$ 6,176.50 · ·			
Helicopter	Viking Helicopters Ltd. Crow's Nest Resources	\$11,086.85 358.86	\$ 11,445.71			
Trucking	North Star Fabricating		\$ 320.00			
Coal Analysis Maps & Reports Filing Fees - Land	Birtley Coal & Minerals Island BluePrint Co. Ltd.	\$ 2,691.86 535.50 389.13	\$ 3,227.36 389.13 (25.00)			
Inter-Dept. Charges						
Drafting & Reproduc	tion		\$ 18,682.00			
Systems & Computer S	Services		\$ 5,398.00			
· Technical Service C	larges .		\$ 3,770.00			
Salaries , Wages & 1	Semefits .		\$ 90,977.00			
Total Direct Expend	itures		\$336,085.44			
20% Office Overhead	•		\$ 67,217.08			
Total Expenditures			\$403,302.52			

8.0 RECOMMENDATIONS

Within the Gething Formation, five coal seams (the Brenda, Twin, Dave, Rat and Contact seams) have been correlated across the property. The upper four seams are thought to contain substantial coal reserves. To exploit these reserves and further understand the stratigraphy and structure of the property, extensive drilling is required. Other exploration methods have been considered, but at this stage of exploration conventional drilling is thought to be the most realistic exploration tool. Studies of surface geophysical surveys have indicated that such surveys are inadequate as an exploration tool in this area.

The drilling should be completed in specific phases. The reserve area defined by the 1982 drill program should be confirmed with infill drilling, then expanded upon with drilling in adjacent areas.

Exploration of the northern portion of the property should also be undertaken. To determine the reserve potential of that area, significant funds will be needed. No access exists at present, necessitating a helicopter supported drill program or the construction of a road.

In all areas of the property additional drill holes will be required to confirm correlations across strike, due to structural complexities which reduce the area of influence around any one hole.

Obtaining coal quality data is of paramount importance. Where significant coal seams are intersected, a sample from each seam will be sent for proximate analyses and vitrinite reflectance measurements. Where the seams have been cored, samples will be taken for maceral analyses. Research into rank and maceral variations throughout the Falling Creek property must be continued and expanded upon.

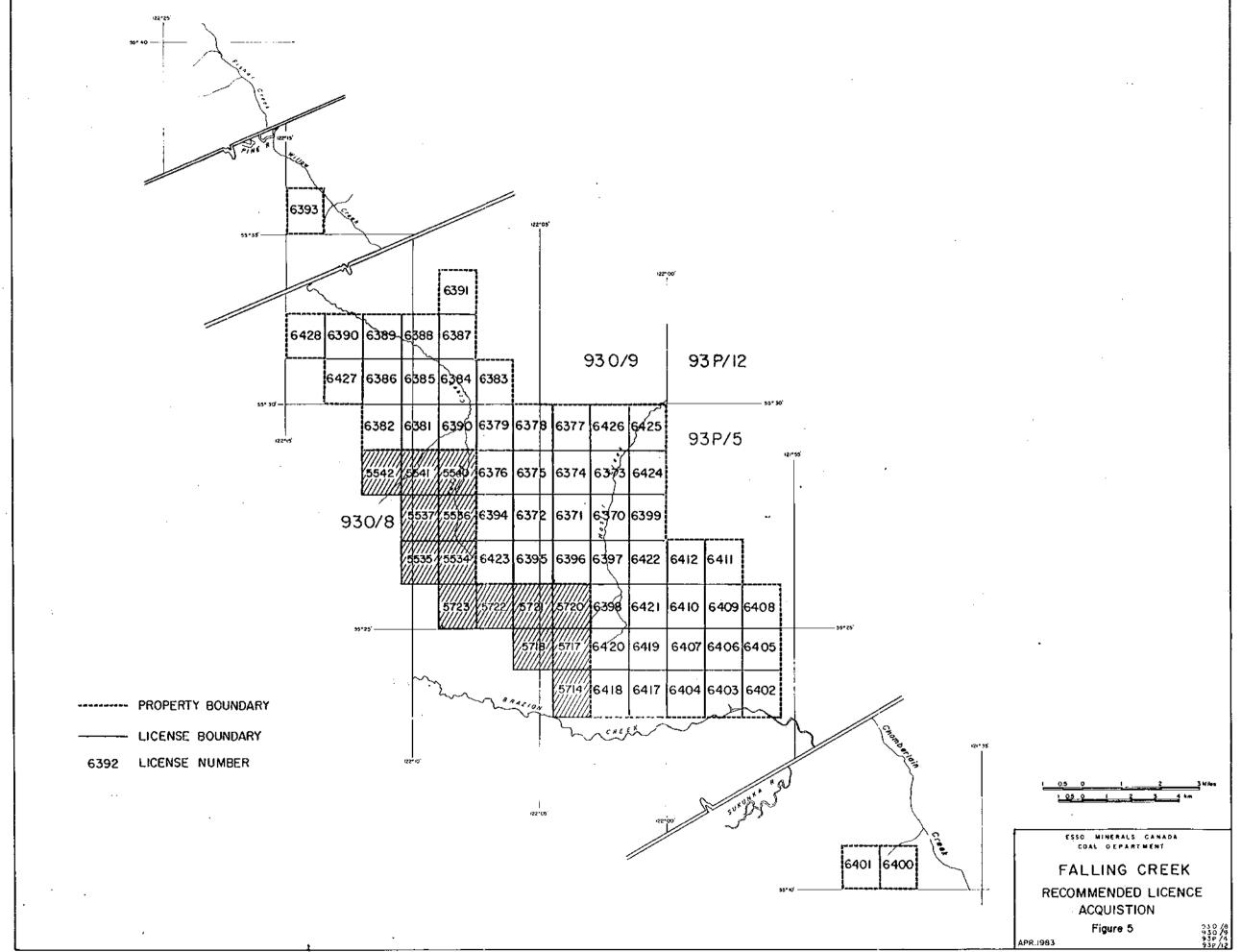
The property has now been sufficiently mapped at the 1:10,000 scale (Traverse Map, Figure 14), but detailed grid mapping and outcrop trenching will be required in some areas.

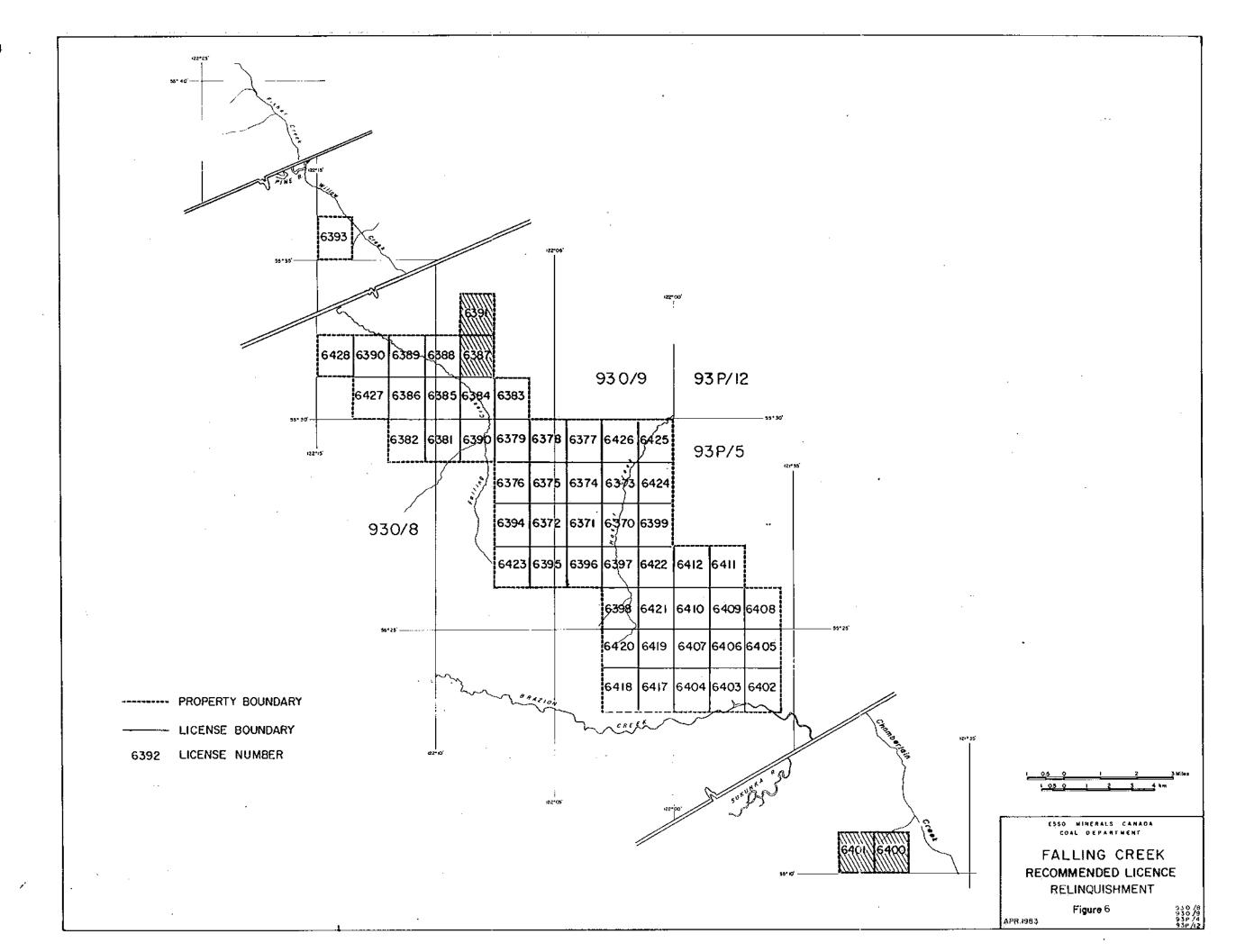
Surveying of all drill hole collars is recommended.

The acquisition of licenses 5534-5537, 5540-5542, 5714, 5717, 5718, 5720-5723 is recommended, should they become available (Figure 5). The reserve area of the property may be increased with the acquisition of these licenses.

Licenses 6387, 6391, 6400 and 6401 are recommended for relinquishment (Figure 6). The Moose Far Formation underlies licenses 6387 and 6391. The Gething Formation coals are not at a surface mineable depth within these two licenses.

The Gething Formation underlying the Chamberlain Creek licenses (6400 and 6401) is stratigraphically below the economic coal seams. No economic coal seams are known to exist in the Dresser/Cadomin Formation which also outcrops on the property.





9.0 CONCLUSIONS

The most important coal bearing formation underlying the Falling Creek property is the Gething Formation. Four coal seams within the formation are thought to constitute substantial reserves. These seams occur in the upper two-thirds of the formation. The coal is medium volatile bituminous and considered to be an excellent thermal coal in its own right and an excellent thermal blend coal for current market specifications.

The structure is complex, but economic mining situations are thought to exist along individual structures.

A single reserve area has been initially defined and as the bulk of the property remains essentially unassessed, other possible reserve areas await discovery. Extensive drilling and coal quality work will be required before a mining situation can be realized.

Bibliography

Dahlstrom, C.D.A. (1970)

Structural Geology in the Eastern Margin of the Canadian Rocky Mountains. Bulletin of Canadian Petroleum Geology Vol. 18, No. 3, (Sept. 1970) p.332-406.

Duff, P. and Gilchrist, R.D. (1981)

Correlation of Lower Cretaceous Coal Measures, Peace River coalfield, British Columbia, B.C. Dept. of Mines and Pet. Res., Paper 1981-3.

Fitzgerald, E.L. (1964)

Structure of British Columbia Foothills, Canada. American Assoc. of Pet. Geol. Bull. Vol. 52, No. 4 (April 1968), p. 641-664.

Hughes, J.E. (1964)

Jurassic and Cretaceous Strata of the Bullhead Succession in the Peace and Pine River Foothills, British Columbia Dept. of Mines and Petroleum Resources, Bull. No. 51, 1964.

Hughes, J.E. (1967)

Geology of the Pine Valley, Mount Wabi to Solitude Mountain, Northeastern British Columbia; British Columbia Dept. of Mines and Petroleum Resources, Bull. No. 52., 1967.

McKechnie, N.D. (1955)

Coal Reserves of the Hasler Creek - Pine Pass Area, British Columbia, British Columbia Dept. of Mines, Bull. 36, 1965.

McLean, R.J. and Jerzykiewicz, T. (1978)

Cyclicity, tectonics and coal: some aspects of fluvial sedimentology in the Brazeau-Paskapoo Formations, Coal Valley area, Alberta, Canada; in Fluvial Sedimentology, A.D. Miall, ed.; Canadian Society of Petroleum Geologists, Memoir 5, p.441-468.

Rust, B.R. (1979)

Coarse Alluvial Deposits in Facies Models, R.G. Walker, ed.: Geoscience Canada Reprint Series 1, p. 9-21.

Stott, D.F. (1968)

Lower Cretaceous Bullhead & Fort St. John Groups between Smoky & Peace Rivers, Rocky Mountain Foothills, Alberta & British Columbia, Can. Geol. Surv., Bull. 152.

Stott, D.F. (1973)

Lower Cretaceous Bullhead Group between Bullmoose Mountain and Tetsa River, Rock Mountain Foothills, Northeastern B.C., Can. Geol. Surv., Bull. 219.

Stott, D.F. (1982)

Bickford and Gorman Creek, two new formations of the Jurassic-Cretaceous Minnes Group, Alberta and British Columbia in Current Research, Part B, Geological Survey of Canada, Paper 81-18, p. 1-9, 1982.

Minnes Coal, Northeastern B.C.; in Current research Part C, Geol. Survey of Canada, Paper 80-IC, p. 135-1387, 1980.

Thompson, R.I. (1979)

A structural interpretation across part of the northern Rocky Mountains, British Columbia, Canada, Can. J. Earth Sci., 16, p. 1228-1241.

CORRECTED FROM GEOD	1	DRILL DEF				
FROM	то	FROM	TO	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	0.61	Overburden		
1.0		0.61	1.22	Coal	Powdered with some medium dark grey mudstone chips	41
	2,3	1.22	2.44	Coal	Powdered bright chips	42, 43
2.3	4.2	2.44	3.0	Siltstone	Samples taken from around the drillhole etc. setting drill collar not sampling.	
4.2	4.8	3.0	3,30	Coal	,	· • • · · · · ·
4.8	6.5	3.30	5.0	Siltstone	Carbonaceous at base	
6.5	8.3	6.0	9.0	SIIty/Mudstone	Medium dark grey, carbonaceous horizons, coal stringers?	
8.3	_	9.0	12.0	Coal/Mudstone	Powdered coal, mudstone, carbonaceous, over 40% coal	44
		12.0	15.0	Coal	Powdered, some hard, brittle chips (dirty horizons)	45
	11.6	15.0	18.0	Coal	Powdered with dirt partings	46
11.6	14.6	18.0	21.0	Coal/Mudstone	Powdered coal, mudstone - slity medium grey	47
14.6	17.8	21.0	24.0	SIltsone/Sandstone	Siltstone medium grey, sandstone very fine grained, hard	
17.8	20.0	24.0	27.0	Mudstone	Mostly medium grey, some carbonaceous mudstone and coal (less than 40%)	
				Water Level		
20.0	22.5	27.0	30.0	Sandstone	Sandstone very fine upper, dark chert and quartz, carbonaceous fragments	
22.5	25.0	30.0	33.0	Sandstone	Very fine upper - same as above with carbonaceous fragments - broken down into a sand	
25.0		33.0	34.0	Mudstone/Sandstone/ Coal	Less than 40% coal powder - chips of dark silty mudstone and hard chips of lower fine grained sandstone	

CORRECTED FROM GEOF		DRILL DEF				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
	28.8	34.0	36.0	SIItstone/Sandstone	Chips of sandstone (very fine grained upper) and siltstone	
28.8	31.6	36.0	37.0	Coal	Mostly powdered coal with few coal chips - also chips of carbonaceous mudstone	48
31.6	34.4	37.0	38.0	Mudstone/Coal	Coal to roughly 37.5 m, mudstone parting (mudstone medium grey, coal powdered) then more coal below	49
34.4	36.4	38.0	39.0	Siltstone/Sandstone	Sandstone very fine lower, medium grey, siltstone medium grey	··· · · · · · · · · · · · · · · · · ·
36.4		39.0	42.0	Mudstone	Slightly carbonaceous to carbonaceous in places, coaly stringers? Rootlets for sure, some siltstone or very fine sandstone horizons	
	42.0	42.0	45.0	Siltstone/Mudstone	Mudstone medium dark grey, coaly stringers, slightly carbonaceous, siltstone medium grey grading to fine sandstone in places	
42.0		45.0	48.0	Sandstone	Very fine lower almost siltstone in places, medium grey	
	49.6	48.0	51.0	Sandstone	Very fine lower to very fine upper, medium grey	- 1
49.6	52.4	51.0	54.0	Siltstone	Medium grey, hard	
52.4	53.6	54.0	57.0	Coal	Powdered mudstone just at base of sample	50
53.6	57.0	57.0	60.0	Sandstone	Very fine lower, medium grey, powders to nice fine sand, very fine sand- stone below but comes up as chips, some coaly material with it	
57.0	58.2	60.0	62.0	Coal	Powdered, mudstone chips, possible parting	51
58.2	59.0	62.0	63.0	Mudstone	Silty-carbonaceous plant fragments - rootlets?	
59•0		63.0	66.0	Sandstone	Very fine grained medium grey - some siltstone, powders to fine sandstone.	

	D DEPTHS PH. LOGS	DR I LI	LERS PTH			
FROM	то	FROM	то) Sandstone	LITHOLOGIC DESCRIPTION	SAMPLE
		66.0	69•0	Sandstone	Very fine grained to fine grained - some siltstone - laminations across fragments - powders to fine sand	
	66.8	69.0	72.0	Sandstone	Very fine grained to fine grained - dark grey laminations - minor silt- stone - large chips up to 2 cm across	
		72.0	75.0	Siltstone .	With sandstone, very fine grained, dark grey, smaller chips than above.	
•		75.0	78.0	Siltstone	Dark grey with minor mudstone - very fine chips	
		78.0	81.0	Mudstone	Dark grey to black - very muddy with tiny pieces - coaly skim on top of water surface, pieces of carbonaceous mudstone, minor siltstone - possible coal seam, coaly fragments	
		81.0	84.0	Siltstone/Mudstone	Dark grey, mudstone has some carbonaceous plant fragments, carbonaceous mudstone is minor	
		84.0	87.0	Mudstone/S11tstone	Dark grey, mostly mudstone - some silty pieces - very small fragments, soft	
		87.0	90.0	Mudstone	Dark grey, minor siltstone - occasional plant fragments - carbon- aceous mudstone, rare sandstone - very fine grained	
		90.0	93.0	Mudstone	Dark grey — carbonaceous mudstone — minor siltstone	
		93.0	96.0	Sandstone	Medium grey to dark grey - minor siltstone as smaller pleces - sandstone up to 2 - 3 cm across - very fine grained	
		96.0	99.0	Siltstone	Dark grey, 30-40% mudstone, siltstone fairly coarse	
		99.0	100.0	No Sample	Just an adjustment by driller	
		100.0	103.0	Siltstone	Dark grey, minor sandstone (approximately 30%), very fine grained, medium dark grey, very minor mudstone, dark grey	

PAGE 4 HOLE NO. 82-1

CORRECTED FROM GEOF	D DEPTHS PH. LOGS	DR I LI DEI	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		103.0	106.0	Siltstone	Siltstone dark grey, minor sandstone very fine lower, medium dark grey (20-30%)	
		106.0	109.0	Siltstone	Dark grey, minor mudstone	
		109.0	112.0	SIItstone	Dark grey, mainly small pieces, possibly very minor mudstone	
		112.0	115.0	Siltstone	Dark grey, minor carbonaceous and coaly stringers; minor medium dark grey, very fine upper to fine lower sandstone; also minor silty mudstone	
		115.0	118.0	Siltstone	Dark grey, minor mudstone no more than 30%	
		118.0	121.0	Siltstone	Dark grey, 40% medium dark grey, fine lower to very fine lower sandstone places up to 1 cm	
		121.0	124.0	Siltstone	Dark grey, minor mudstone in very small pieces, also minor very fine lower medium dark grey sandstone	
		124.0	127.0	Siltstone	Dark grey, same as 121–124 but slightly more mudstone (up to 20%)	
		127.0	130.0	Mudstone	Dark grey, mudstone at least 70%, minor siltstone, minor coaly stringers in mudstone pieces	
127.4	131.8	130.0	133.0	Mudstone	Dark grey, minor siltstone, minor calcite grains, coaly skim on water	52
		133.0	136.0	Mudstone	Dark grey, minor siltstone and very minor very fine lower medium dark grey sandstone, minor coaly skim	
		136.0	139.0	Siltstone	Dark grey, pieces up to 1 cm, minor mudstone in smallest pieces (1mm)	
		139.0	142.0	Mudstone	Dark grey, minor silty mudstone and fine slitstone in larger pieces	
		142.0	145.0	Mudstone	Dark grey, minor siltstone present in larger pieces (20%), minor silty mudstone in smaller pieces like mudstone	

PAGE 5 HOLE NO. 82-1

CORRECTE	D DEPTHS PH. LOGS	DRIL DE	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		145.0	148.0	Mudstone	Dark grey, slitstone and silty mudstone in larger pieces (30-40%), very minor (less than 1%) quartz grains up to 3 mm in length	
		148.0	151.0	Mudstone	Dark grey, 30-40% silty mudstone, all larger pieces are silty mudstone, higher percentage of the finest material (mud)	
		151.0	154.0	Mudstone	Same as 148 - 151 m interval	, , <u>, , , , , , , , , , , , , , , , , </u>
		154.0	157.0	Mudstone	Dark grey, larger pieces are all silty mudstone plus some siltstone (20%), smallest pieces silty mudstone (30%)	
		157.0	160.0	Mudstone	Dark grey, minor carbonaceous plant fragments found in silty mudstone; mostly silty mudstone, very minor siltstone and very fine lower sand- stone which are present in larger places	
		160.0	163.0	Mudstone	Dark grey, mostly silty mudstone with minor siltstone, carbonaceous plant fragments and coaly stringers	
		163.0	166.0	Mudstone	Dark grey, silty mudstone with minor siltstone	
		166.0	169.0	Mudstone	Dark grey, silty mudstone	x
		169.0	172.0	Mudstone	Dark grey, silty, slightly carbonaceous	
		172.0	175.0	Mudstone	Dark grey, silty, mudstone contains minor coaly stringers	
		175.0	178.0	Mudstone	Dark grey, slightly silty, carbonaceous, small minor coaly stringers (less than 5%)	
		178.0	181.0	SIItstone	Medium grey, very fine grained - slightly carbonaceous, few tiny coal pleces - muddy	
		181.0	184.0	Mudstone	Very silty - medium grey- slightly carbonaceous	

PAGE 6 HOLE NO. 82-1

CORRECTED FROM GEOR			LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		184.0	187.0	Siltstone/Sandstone	Up to lower fine grained (mostly), medium grey - lack of carbonaceous material	
	i	187.0	190.0	SIItstone/Sandstone	Very fine grained - medium grey color - few small carbonaceous/coaly fragments	
		190.0	193.0	Siltstone/Sandstone	To very fine grained – medium grey color – few small coaly carbonaceous fragments	
		193.0	196.0	Siltstone/Sandstone	To very fine grained - medium grey color - few small coaly carbonaceous fragments	
		196.0	199.0	Sandstone	Very fine grained - medium grey color - very few small coaly carbon- aceous fragments	
					END OF HOLE	
					LOGGER'S DEPTH 201.0 m	
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			<u> </u>			
					·	
					·	

CORRECTED FROM GEOF		DRILI	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	19	Casing		
18	22	19	21	Mudstone	Dark grey, pieces up to 2 cm, sample is dry, very minor silt-sized grains.	
22	26	21	24	Mudstone	Brownish grey, sample is mostly a very fine powder, few pieces up to 0.4 mm. Sample is dry, minor carbonaceous material.	
26	29	24	27	Coal	Sample Is a very fine powder.	37
29	32	27	30	Mudstone/Coal	Dark grey, very carbonaceous with coaly stringers in every piece. Pieces are harder than usual coal, coal skim (wet).	38
32		30	33	Mudstone	Brownish grey to dark grey, carbonaceous and coaly stringers to 30% very minor calcite like grains	39
	34.4	33	36	Mudstone	Dark gray, carbonaceous with coaly stringers (30%).	
34.4	37.0	36	39	Mudstone/Coal	Dark grey, carbonaceous. Coal pleces are fairly hard, dirty, coaly mate in large and small pieces.	40
37.0	41.0	39	42	Mudstone	Dark grey, carbonaceous, coaly stringer material present in small pleces, all larger pieces are mudstone with no apparent coaly stringers.	
41.0	45.0	42	45	Mudstone	Dark grey, minor carbonaceous material; mostly small (up to 0.5 cm) chips.	
45.0	49.0	45	48	Mudstone	Dark grey, minor carbonaceous fragments (less than 5% - mostly small chips but up to 1 cm).	- V -
49.0	53.0	48	51	Mudstone ·	Dark grey, slightly silty, minor coaly and carbonaceous fragments - otherwise similar to above.	
53.0	57.0	51	54	Sandstone/Siltstone	Dark grey, muddy slitstone, sity mudstone with tiny carbonaceous plant fragments and prints, larger chips (to 1.5 cm) of sandstone, very fine grained (upper), mudstone - slitstone/sandstone approximately 3/1, approximately 2% of sample is broken calcite fragments and surfacing on chips.	

CORRECTED FROM GEOF	DEPTHS	DR I LI DEF	ERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
57.0	59.0	54	57	Sandstone	Medium dark grey, grain size up to upper medium grained, most is upper fine grained, larger grain size fragments are relatively clean while finer grained fragments are more dirty, minor coaly and carbonaceous fragments, quartz: chert rock fragments approximately 4:1, approximately calcite veinlets through much of the sandstone chips.	
59.0	61.4	57	60	Mudstone	Approximately 20% coal, mudstone is very carbonaceous with tiny plant fragments and very thin stringers, grayish black, minor number of small sandstone chips, fine grained pieces from very small to 2 cm sizes.	
61.4	64.0	60	63	Siltstone/Sandstone	Grain size to lower medium grained, most of sample (70%) is dark grey muddy siltstone, carbonaceous sandstone is medium light grey, rounded grains, and well sorted, relatively clean sand chips, also coal chips to 1/2 cm across (but still less than 5% coal), less than 2% calcite fragments.	
				SHUT DOWN AT APPROXI	MATELY 0045 HOURS JULY 31/82 AT 63 METRES DEPTH (broken universal joint) Hole actually completed thus far to approximately 60 m, error possibly due to mistake of beginning depth. Should possibly have been 16 m instead of 19 m. Actual sample of interval 60-63 m as written above.	
64.0	67.0	63	66	Siltstone/Sandstone	Sandstone: medium dark grey, up to very fine (upper) grain size, grains appear to be fairly well rounded. Chips up to 1 cm in size. Siltstone: dark grey from very fine to very coarse, overall carbonaceous with coaly stringers and pieces (approximately 5%), calcite pieces average 1-2 mm (1-2%) but one large piece 1 cm in size found, coarse siltstone dominant lithology 60-40.	
67.0	70.0	66	69	Siltstone/Sandstone	As per 63-66 m interval; slitstone appears to be even more dominant to sandstone, 70/30 to 80/20 in favour of slitstone. Coaly pieces, approximately 5%. Calcite still present (1%).	•

	D DEPTHS PH. LOGS	DR I LI DEF	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
70.0	72.4	69	72	SIItstone/Sandstone	Siltstone and sandstone descriptions as per above. Siltstone: sandstone is approximately 2:1. Carbonaceous and coaly pieces less evident (1-2%) Calcite still present (1%). Some well formed calcite crystals in larger sandstone pieces. Minor clasts in sandstone to 2 mm in size (chert?).	
72.4	76.0	72	75	Sandstone	Medium dark grey matrix, fine (upper) to medium (lower) grained, clasts to coarse (upper) in grain size, clast: matrix is 3:2 to 2:1, most clasts appear to be of dark chert. Very minor carbonaceous material, calcite pieces and veins in 5% of rock, pieces generally bigger in size averaging 3-4 mm. Clasts subangular to subrounded.	
76.0	80.0	75	78	Sandstone	Medium grey to medium dark grey, medium (upper) to coarse (upper) grain size, some pieces clast-supported, some matrix-supported. Major clasts are chert and are sub-angular to sub-rounded up to 3-4 mm, but average 2 mm in size. Minor dark grey siltstone/mudstone pieces. Calcite present in up to 5% of rock sample. Large piece of sandstone 2.5 cm in size.	
		78	81	Sandstone/Siltstone	Dark grey; pleces range from a siltstone to very fine grained (upper) sandstone; grains rounded , very minor calcite (less than 1%) and minor carbonaceous material.	
,		81	84	Sandstone/SIItstone	Dark grey, very fine grained, some slitstone, minor calcite pieces and carbonaceous fragments, approximately 5% high silica (approximately 80% quartz) content, upper fine grained sandstone, medium dark grey sandstone pieces.	,
		84	87	Sandstone	Dark grey, silty to lower fine grained, minor calcite and tiny carbon- aceous fragmonts.	
<u> </u>		87	90	Sandstone 	Bulk of sample is fine grained but 5-10% is lower and upper coarse grained, also minor calcite fragments, minor hard carbonaceous mudstone fragments (approximately 5%), coarse sandstones are mostly chert fragments, rounded, well sorted.	,

CORRECTED FROM GEOF	DEPTHS PH. LOGS	DR I LI DEI	LERS PTH	<u> </u>		
FROM	то	FROM	TO	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		90	93	Mudstone/Coal	Approximately 30% coal and carbonaceous fragments, otherwise carbon- aceous mudstone, larger chips are slightly silty, coal fragments are and bright, sometimes as fine bright stringers.	
		93	96	Mudstone	Slightly silty, dark grey, less than 5% coal chips and fragments, less than 1% calcite fragments.	
		96	99	Mudstone	Slightly silty, dark grey, less than 5% coal chips and fragments.	
		99	102	Mudstone .	Dark grey with very thin carbonaceous stringers and less than 2% carbonaceous fragments, powder to 1 cm chips, one large chip $2 \times 2 \times 3$ cm.	
	,	102	105	Sandstone	Upper very fine grained, dirty, 1/2 to 1 cm sized chips, also approximately 5% bright coal fragments and approximately 5% calcite, (one chip greater than 1 cm size).	
,		105	108	Sandstone	Upper very fine grained to lower fine grained, very minor amounts of coaly and calcite fragments to less than 5%, some to 1 cm size chips.	
		108	111	Siltstone	With minor very fine grained sandstone chips (less than 5%), approximately 15% bright coal chips and fragments.	Coal Seam no
		111	114	SIItstone/Sandstone	Lower very fine grained, dark grey, less than 5% coaly fragments and calcite fragments, chip size is coarse to 1 cm size.	
		114	117	Siltstone/Sandstone	Up to very fine grained, medium grey, less than 5% coal, carbonaceous and calcite fragments.	
		117	120	SIItstone/Sandstone	Same as above, approximately 10% carbonaceous mudstone, less than 5% coal and calcite fragments, minor (less than 2%) pale brown, very fine grained sandstone.	

CORRECTED DEPTHS E FROM GEOPH. LOGS			LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		120	123	Sandstone/Coal	Approximately 30% coal in small grains and 1/2 cm pieces, dull and bright chips, sandstone is upper fine grained, medium dark grey, carbonaceous plant impressions, dirty/predominance of dark minerals. NOTE: DUE TO WATER PRODUCTION, COAL SAMPLES MAY BE PREFERENTIALLY WASHED AWAY	Coal seam not recovered
		123	126	Siltstone	Dark grey carbonaceous plant fragments, much less than 5% coaly carbonaceous fragments, much less than 5% calcite.	
		126	129	Mudstone	Approximately 20% very fine grained sandstone, less than 5% bright coal fragments, calcite on some sandstone surfaces and very thin stringers.	
		129	132	Siltstone	10-15% very fine grained sandstone, minor coaly fragments (less than 5%) more calcite fragments, clear crystalline calcite as well (approximately 5%).	
		132	135	Mudstone	Slightly silty, 10% very fine grained sandstone chips, approximately 5% coaly fragments and calcite chips and fragments.	
·		135	138	Sandstone	Medium grey, upper and lower medium grained sandstone, relatively clean quartzite (approximately 50%), salt and pepper type, 40% of sample is silty mudstone, less than 5% coaly fragments and calcite fragments, occasional iron-stained fragments. NOTE: 0500 HOURS-DUE TO WATER, TRIP HOLE, REPLACE HAMMER WITH TRICONE	
		138	141	Mudstone	Dark grey, minor siltstone, coal fragments (less than 5%), bright when broken, calcite fragments as crystals and on grains, slickensides on siltstone grains; a few grains of sandstone, very fine grained.	
		141	144	SIItstone	Medium grey, mudstone common, very minor sandstone, slickensides with calcite veining on fragments, calcite crystals (very minor, tiny grains), no coal.	

CORRECTE		DR I LI	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	· SAMPLE
		144	147	Siltstone	Medium grey, minor sandstone very fine grained, very minor mudstone, slickensides and calcite veining common on fragments, calcite fragments (very few).	
		147	150	Siltstone	Medium grey, minor mudstone with rare carbonaceous mudstone, rare sandstone, fine grained, slickensides and calcite veining, but not as abundant as above.	
		150	153	Siltstone	Medium grey, approximately 20% mudstone - some of which is carbonaceous mudstone, calcite velning, but very sparce.	,
		153	156	Siltstone	Medium grey, very sparce calcite veining, calcite fragments - , 2 - 3 fragments.	
		156	159	Siltstone	Medium grey, approximately 20% mudstone with carbonaceous mudstone, slickensides, calcite veining (sparce).	
		159	162	Siltstone	Medium grey, dark grey mudstone (approximately 30%), some carbonaceous mudstone, no calcite but many slickensides.	
		162	165	Siltstone/Sandstone	Almost equal amounts siltstone, medium dark grey to dark grey and sand- stone, medium dark grey, sandstone has quartz and dark chert, very fine (upper) grained, calcite fragments, separate and small calcite surfaces common.	
		165	168	Siltstone	Minor sandstone, very fine (upper) grained, quite clean. Siltstone is medium to dark grey with fine coaly fragments, obviously very carbon-aceous in places and possibly coal stringers, calcite fragments and veining is common.	
		168	171	Siltstone	Medium dark grey with few fragments of very fine (upper) grained sand- stone, calcite surfaces and fragments still present.	
		171	174	Siltstone/Sandstone	(Hard drilling) siltstone to very fine (upper) grained- size sandstone, mostly medium dark grey & dirty (few light, cleaner fragments), siltstone is medium dark grey, slightly carbonaceous, few isolated calcite fragments, (no veining), good polished surface.	

		DR1L DE	LERS PTH			
FROM.	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		174	177	Siltstone	Medium dark grey, slightly carbonaceous and rare çoal fragments, rare calcite fragments also.	
		177	180	Siltstone	Medium dark grey, very rare carbonaceous fragments and isolated calcite fragments.	
		180	183	Mudstone	Carbonaceous to coaly, probably with coaly stringers and rare calcite surfaces (small sample), occasional polished surfaces.	
		183	186	Siltstone	Minor carbonaceous mudstone (coaly), siltstone is medium dark grey, occasional calcite surfaces.	
		186	189	SIItstone/Sandstone	Siltstone dominant 60:40, medium dark grey sandstone, very fine grained, medium grey polished surfaces, calcite and veining fragments common, minor carbonaceous mudstone and coaly fragments	
		189	192	Siltstone/Sandstone	and minor mudstone, mostly carbonaceous, real good mix in this one with common calcite fragments and veining, polished surfaces also. Siltstone and sandstone, medium dark grey, sandstone is very fine grained (lower), few grains of sandstone are coarse (upper) with quartz and chert. Chert is almost entirely dark, angular and sub-angular. Quartz generally forms matrix of medium-medium upper grains.	
		192	195	SIItstone/Sandstone	Sandstone is very fine (lower) grained, medium dark grey siltstone-same color, calcite fragments and velning common, minor amounts carbonaceous mudstone, few very small grains of pale grey, silty mudstone (has appear of gouge as in fault).	
		195	198	SIltstone/Sandstone	As above with higher proportion of sandstone. Contains all above constituents with perhaps marginally more carbonaceous material.	
					LOGGER'S DEPTH = 197	

CORRECTEI FROM GEOI		DR I LL DEF	ERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0.0	2.0	Casing .		
2,6	4.0	2.0	3.0	Coal	Mostly powdered - bright fragments	34
4.0	6.5	3.0	6.0	Mudstone	Silty - medium light grey - lack carbonaceous material	
6.5	9.0	6.0	9.0			
9.0	12.0	9.0	12.0	Siltstone/Coal	Siltstone - brownish grey - powdered Coal - powdered with silt- stone chips - bright fragments - 60% coal	35
-				Water Level		
12.0	15.0	12.0	15.0	Siltstone	Sample originally very muddy (i.e. slurry) medium dark grey color – muddy/sandy – 30% very fine grained sandstone fragments less than 5% coaly fragments	
15.0	18.0	15.0	18.0	Sandstone	Lower medium grained - less than 1 cm pieces, medium grey, less than 50% dark minerals and black chert, relatively clean - traces of coaly carb. fragments - less than 20% silty mudstone fragments	
18.0	22.0	18.0	21.0	Mudstone	Medium dark grey - less than 10% fine grained sandstone fragments, lack of coaly fragments	
22.0	25.0	21.0	24.0	Siltstone/Very Fine grained sandstone	Medium grey - trace of coaly carbonaceous fragments	
25.0	27.5	24.0	27.0	Sandstone	Very fine grained to medium light grey - lower medium grained sandstone, clean, less than 50% dark minerals - less than 5% coal, carbonaceous fragments and mudstone	
27.5	30.0	27.0	30.0	Sandstone	Medium grained (upper and lower) medium light grey color less than 40% dark minerals – also mudstone fragments approximately 15% less than 5% coaly carbonaceous fragments	

CORRECTED FROM GEOR		DRILLERS DEPTH				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		30.0	33.0	Siltstone	Approximately 20% coal, muddy siltstone, dark grey, less than 1 cm size coal fragments, bright mm size	coal seam not recover- ed
		33.0	36.0	Mudstone	Dark grey carbonaceous stringers - less than 5% coaly carbonaceous fragments, chips 1/2 mm to 1-1/2 cm size	
		36.0	39.0	Mudstone/Siltstone	Approximately 50/50 mudstone, silty, medium dark grey also, approximately 10% very fine grained sandstone, less than 5% coaly carbonaceous fragments	
		39.0	42.0	Mudstone	Dark grey silty carbonaceous mudstone with tiny carbonaceous plant frag- ments, less than 5% calcite stringers, less than 5% coal carbonaceous fragments, approximately 5% fine grained sandstone fragments	
		42.0	45.0	Mudstone	Dark grey, slightly silty, carbonaceous, approximately 5% coal frag- ments	
		45.0	48.0	Mudstone	Dark grey, slightly silty, much less than 5% carbonaceous fragments	
		48.0	51.0	Mudstone	Dark grey, slightly silty, much less than 5% carbonaceous fragments, approximately 5% fine grained sandstone	
		51.0	54.0	Siltstone	Medium dark grey, much less than 5% carbonaceous fragments	
		54.0	57.0	Mudstone	Dark grey, carbonaceous mudstone, approximately 20% coal, approximately sandstone fragments, fine to very fine grained, slickensides on mudstone	
		57.0	60.0	Mudstone	Dark grey, minor siltstone, 5-10% very fine sandstone, medium grey	
		60.0	63.0	Mudstone	Dark grey carbonaceous mudstone, coal (approximately 5-10%), slicken- sides and calcite on mudstone, approximately 30-40% siltstone	

CORRECTEI FROM GEO		1				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
,		63.0	66.0	Mudstone	Dark grey, rare carbonaceous mudstone,approximately 30-40% siltstone, medium dark grey, rare sandstone fragments, medium grey,approximately 1%	
		66.0	69.0	Mudstone/Siltstone	Dark grey, mudstone, slickensides, calcite on fragments, siltstone medium dark grey, rare sandstone, very fine grained, rare carbonaceous mudstone	
		69.0	72.0	Mudstone	Dark grey, rare carbonaceous mudstone, large 2 cm x 1 cm lump of coal, no other coal fragments, probably from seam up-hole.	
		72.0	75.0	Mudstone/S11tstone	Dark grey, carbonaceous mudstone and coal 10-15%, siltstone 40% medium dark grey, rare slickensides and calcite veining	
		75.0	78.0	Mudstone/Coal	Dark grey, carbonaceous mudstone and coal, 40% mudstone, 60% slicken- sides, coal is bright	coal seam not recover ed
		78.0	81.0	Siltstone	Medium dark grey, mudstone 30%, rare fragments of coal, carbonaceous mudstone, calcite veining	
		81.0	84.0	Siltstone	Medium dark grey, mudstone 30%, rare fragments of coal, carbonaceous mudstone, calcite veining	
. —		84.0	87.0	No sample		
	·	87.0	90.0	SIItstone/Coal	Medium dark grey, coal and carbonaceous mudstone approximately 30%, coal is sheared, sandstone 10%, fine to very fine grained, calcite crystals and calcite veining on carbonaceous mudstone	
		90.0	93.0	Mudstone .	Dark grey, carbonaceous mudstone, very minor calcite veining in mudstone fragments, slickensides on mudstones, trace of coal fragments; approximately 30% siltstone, medium dark grey	

CORRECTED FROM GEOR		1 '1				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		93.0	96.0	Mudstone	Dark grey, calcite veining on a few fragments, siltstone approximately 30% to 40%, medium dark grey	
		96.0	99.0	Siltstone/Sandstone	Siltstone with some silty mudstone, medium dark grey to dark grey, carbonaceous sandstone, very fine grained (lower), almost siltstone. Some chips of bright, brittle coal with concholdal fracture (some fragments up to 1 cm long). Occasional fragments and surfaces of calcite	
		99.0	102.0	Mudstone	Dark grey, carbonaceous, minor sandstone, very fine grained (lower - upper) also 10-20% coal fragments, mudstone looks very carbonaceous in places and almost certainly has coal stringers/partings. 1 small calcite fragment	coal seam not recover- ed
		102.0	105.0	"Mixed"	Sandstone 10-20%, very fine grained (lower to upper), some fragments are quite clean, others dirty and carbonaceous, mostly medium light grey, siltstone and silty mudstone 60-70%, medium dark grey and dark grey where carbonaceous mudstone and coal make up rest. Mudstone is carbonaceous, coal in fragments up to 1-1/2 cm long but mostly in powder. Occasional polished surfaces	
		105.0	108.0	Sandstone	Mostly medium light grey and very fine grained (lower to upper), quite clean, other fragments are more carbonaceous and seem bedded with siltstone or carbonaceous silty mudstone, less than 10% sample is dark grey, carbonaceous, silty mudstone to mudstone, rare coal fragments, usually very small	
		108.0	111.0	Sandstone	Mostly medium light grey or medium grey and very fine grained (lower to upper). One fragment is light grey and salt/pepper type with dark chert. Another is coarse grained (lower), salt/pepper with quartz and dark chert, minor carbonaceous silty mudstone and perhaps 2-3% coal fragments	
		111.0	114.0	Siltstone/Sandstone	Sandstone very fine grained (lower), medium dark grey, rare coal fragments	

CORRECTEI FROM GEO						
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		114.0	117.0	Siltstone	Minor sandstone, very fine grained (lower), medium dark grey, occasional calcite surfaces and fragments, occasional coal fragments	
		117.0	120.0	Sandstone/Siltstone	Sandstone from medium (lower) to very fine grained (lower), mostly dirty, occasionally cleaner, usually medium grey, siltstone is medium dark grey, occasional fragments of granular pyrite, very rare coal fragments	
		120.0	123.0	Siitstone	Minor coal and sandstone, (20% of sample), coal in large fragments looks fractured, fragments 3-4 cm, polished surfaces, sandstone is very fine grained (lower), slightly lighter grey than siltstone which is medium dark grey	
		123.0	126.0	Sandstone	Medium dark grey, dirty, very fine grained (lower to upper), minor carbonaceous and silty mudstone, very rare coal	
		126.0	129.0	Sandstone	About 60:40 with siltstone, sandstone very fine grained (upper to medium upper), medium light grey, salt and pepper type is medium grain size, siltstone is carbonaceous and dark grey, rare coal fragments, varying in size from mm to 3 cm	
		129.0	132.0	Sandstone	Very fine grained (lower), minor siltstone, medium dark grey, one siltstone chip has tiny nodular pyrite, pyrite is in granular form with round outer shell, rare coal fragments, large chips size, + 1 cm common	
		132.0	135.0	Siltstone	Medium dark grey, minor sandstone, medium grained (lower), rare coal fragments, occasional pyrite surfaces	
		135.0	138.0	Siltstone/Sandstone	Siltstone is medium dark grey, sandstone is very fine grained (lower to to upper) and is a shade lighter, minor carbonaceous mudstone, rare coal, large chips common (3-4 cm)	
		138.0	141.0	Sandstone	Very fine grained (lower to upper), medium dark grey, minor siltstone (is a shade darker), very rare calcite fragments and coal	

	CORRECTED DEPTHS FROM GEOPH. LOGS		LERS PTH		,	the second se
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		141.0	144.0	Sandstone/Siltstone	Sandstone very fine grained (lower to medium upper), lighter and cleaner with increased grain size, medium grey to medium light grey, salt and pepper type medium grained, siltstone is medium dark grey, rare coal. I large piece of coal (4 cm diameter) probably fallen or washed in	the same of the state of the same of the
		144.0	147.0	Sandstone/Siltstone	Siltstone is 40% or less, medium dark grey, sandstone is medium (lower) grained to coarse (lower) grained, some is finer, mostly medium light grey, salt and pepper type, quartz and chert (mostly dark), finer grain sizes are medium grey, very rare coal, very rare carbonaceous mudstone/silty mudstone	
		147.0	150.0	Sandstone	Medium (lower) to medium (upper) grained, medium grey, large proportion of sample is loose sand, minor medium dark grey siltstone, mudstone and coal all rare but I'd better mention them or Auntie Louise will tell me off.	
		150.0	153.0	Sandstone	Medium grey to medium dark grey, fine to coarse (lower) grained, chert and quartzite grains, quartz matrix, large portion of sample is loose sand, some carbonaceous fragments on sandstone pieces, siltstone less than 15%, trace of coal – possibly from cave, very tiny pieces	
				NOTE:	Drill footage is 20 feet out; interval 156-159 is actually 162-165 m, now using tricone therefore pieces are much smaller. Hole is producing water.	
		153.0	156.0	Sandstone	Dark grey to medium light grey; grain size from very fine lower to coarse upper, coarsest pieces are clast supported (80% clasts), 70% of clasts are dark chert, the remaining 30% clasts are quartz, 60% of sample is composed of the coarser sandstone. Less than 5% coaly pieces, which probably came from cave above, sandstone is single sand grains and chips, minor slitstone	
		159.0	162.0	Sandstone	As above except maximum grain size is medium upper (20%), average grain size being fine lower (60%), 20% grading to siltstone	
				NOTE:	Samples almost completely fine powder (individual grains) because we are using the tri-cone; less than 10% larger pieces	

PAGE 7 HOLE NO. 82-3

CORRECTED FROM GEOD						
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		162.0	165.0	Sandstone	Medium grey to dark grey; grain size up to medium lower, approximately 30-40% siltstone with minor (10%) mudstone. Largest pieces are coaly therefore must be coming from above by caving. Well formed (recrystallized) quartz crystal found on one sandstone grain. Coarsest sandstone matrix supported with mostly black chert clasts.	
		165.0	168.0	Sandstone/SIItstone	Medium dark grey to dark grey, sandstone to fine upper; minor mudstone and coaly pieces, coal probably again from above. Largest pieces are sandstone and coal up to 1 cm. Piece of siltstone containing pyrite	
		168.0	171.0	Siltstone/Sandstone	Medium grey to dark grey, sandstone to fine upper, 50% siltstone, 30-40% sandstone with approximately 10% mudstone. Minor carbonaceous and coaly material, also coaly pieces from slumping above. Minor (less than 2%) calcite pieces	
		171.0	174.0	Mudstone	Dark grey, siltstone approximately 15%, sandstone approximately 25%, coal approximately 5%, sandstone very fine grained to fine lower, sandstone medium light grey	
		174.0	177.0	Siltstone	Dark grey; minor sandstone (15-20%) medium to medium light grey, grain size of chert and quartz up to fine upper, mudstone approximately 10%, dark grey, minor carbonaceous material in some pieces, less than 1% calcite	
		177•0	180.0	Siltstone	Dark grey, 20% medium dark grey, sandstone to very fine upper, mudstone approximately 20%, minor coaly pieces and carbonaceous material approximately 1%, calcite pieces, minor coaly stringers in some siltstone pieces	
					END OF HOLE AT 180 m Hole was producing a substantial amount of water. The hole was plugged LOGGER'S DEPTH = 180 m	

CORRECTED DEPTHS FROM GEOPH. LOGS		DRILLERS DEPTH			·	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	6		20 ft. casing to bedrock, surface outcrop is sandstone, very fine grained (upper), finely laminated, dirty with coaly rootlets and large plant casts on bodding surfaces, 322/20	
		6	9	Siltstone	Medium dark grey, minor mudstone and carbonaceous mudstone, minor sandstone, very fine grained (upper) and few coaly fragments, polished surfaces present in mudstone	
7.4	10.8	9	12	Coal	Powdered with minor mudstone, brownish grey	28 ,
10.8	13.5	12	13	Mudstone/Coal	Silty, dark grey, carbonaceous with abundant powdéred coal	29
13.5	14.5	13	15	Mudstone	Silty, brown, minor powdered coal	
14.5	16.5	15	18	Mudstone/Coal	Approximately 1:1 in sample, silty, dark grey mudstone, slightly carbon-aceous, coal-powdered with bright fragments	30
16.5	17.3	18	21	Coal	Powdered with bright fragments, less than 5% mudstone chips	31
17.3		21	24	Siltstone	Dark brown non-carbonaceous	
		24	27	Siltstone	Dark brown non-carbonaceous	
**************************************	30.0	27	30	Siltstone	Dark brown, powder, sample consists of grains to very fine grained sand- stone chips.	
30.0 1.7 m	32.9 Coal	30	33	SIItstone/Coal	Dark brown, the last mewtre of sample is powdered coal with bright fragments and approximately 5% black carbonaceous mudstone chips	
32.9	34.5	33	36	Coal	Powdered with bright fragments and approximately 5% carbonaceous mudstone chips	32
		36	39	Mudstone	Dark brown and dark grey - dark grey is very carbonaceous with tiny coaly stringers	\

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32-	4	•

CORRECTED DEPTH FROM GEOPH. LOG		Lers Pth	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION .	SAMPLE
FROM TO	FROM	то			
	39	42	Mudstone	Some is slightly silty - dark brown color - trace (much less than 5%) bright coaly fragments	
	42	45	Siltstone	Dark brown - trace (much less than 5%) of calcite and carbonaceous fragments	
	45	48	Mudstone	Dark brown with approximately 30% powdered coal	
	48	51	SIItstone	Dark brown with minor sandstone, very fine grained (lower), medium dark grey, rare coaly fragments and carbonaceous mudstone	
		 	Water Level	· · · · · · · · · · · · · · · · · · ·	
	51	54	Sandstone .	Medium grey, very fine grained (lower to upper), quite clean, minor siltstone (a shade darker) and carbonaceous mudstone with rare coal fragments	
	54	57	Siltstone	Occasionally grading to very fine grained (lower) sandstone, medium grey and medium dark grey with carbonaceous material, largely non-carbonaceous	
	57	60	Sandstone	Medium dark grey, very fine grained, quite clean with slitstone (30-40%), minor mudstone, carbonaceous	···
	60	63	Siltstone	Dark brown non-carbonaceous	
	63	66	Sandstone	Medium dark grey, lower very fine grained, non-carbonaceous, 1/2 mm to cm size chips, mudstone possibly washed out	
	66	69	Sandstone	Same as 63-66	
	69	72	SIItstone	Medium dark grey, minor sandstone is lighter grey, very fined grained, approximately 10% mudstone, trace coal	
	72	75	SIItstone	Medium dark grey, carbonaceous mudstone and mudstone approximately 30% - smaller chips than siltstone	,

	DEPTHS	DR I LI	LERS PTH			
FROM	то,	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		75	78	SIItstone/Mudstone	Siltstone - medium grey, mudstone-dark grey, carbonaceous,60/40 siltstone/mudstone, slickensides	VIT 33 No Bulk
		77	78	Coal	Powder, carbonaceous mudstone 20%	
		78	81	Siltstone	Medium dark grey, mudstone with trace carbonaceous mudstone (30%)	
		81	84	Mudstone	Dark grey, minor carbonaceous mudstone	
		84	87	Sandstone	Medium grey, very fine grained (lower), minor siltstone, slightly darker	,
		87	90	Sandstone	Medium gréy, very fine grained (lower to upper), trace carbonaceous mudstone with calcite veining	,
		90	93	Sandstone	Very fine grained, medium grey, minor siltstone (20–30%), trace mudstone and carbonaceous mudstone (less than 5%)	
		93	96	Siltstone	Medium grey, minor mudstone, carbonaceous mudstone less than 30%	
		96	99	Siltstone.	Medium grey, trace very fine grained (lower) sandstone, trace mudstone	
		99	102	Siltstone	Medium grey, mudstone less than 20%, very fine grained sandstone (less than 15%), calcite crystals and veining on mudstones	<u></u>
		102	105	Siltstone	Medium grey, very fine grained (lower) sandstone (less than 20%)	
		105	108	Siltstone	Medium dark grey, less than 1% coaly pieces from above? Pieces of silt- stone, carbonaceous, minor calcite in contact with striated surface of carbonaceous material, less than 1% carbonaceous pieces	
···········		108	111	Siltstone	Dark grey, 30-40% medium grey sandstone, fine (upper) grain size, up to 5% coal pieces, some showing slickensided surfaces. Some grains have calcite surfaces which show slick surfaces; calcite 3-4%. Minor coaly stringers in slitstone	

CORRECTED FROM GEOF		DRIL	LERS PTH	MAIN LITHOLOGY		
FROM	ТО	FROM	T0		LITHOLOGIC DESCRIPTION	SAMPLE
		111	114	SIItstone/Sandstone	Dark grey, 40% medium dark to medium grey sandstone, up to medium lower grain size, less evidence of coaly pieces (only 1-2%), carbonaceous, 5% calcite in pieces up to 0.7 cm in size. Polished and slickensided surfaces still present	
		114	117	SIItstone	Dark grey, 20-30% medium dark grey sandstone whose grain size is up to very fine upper. Minor carbonaceous material and minor small coaly stringers. Calcite 2-4%, still minor evidence of slickensiding. Minor mudstone	
		117	120	Siltstone	Same as 114-117 interval. Sandstone grains to fine upper. No evidence on pieces of slickensiding but calcite pieces still present. Very minor coaly pieces (less than 1%).	
		120	123	Siltstone	Dark grey, 30% sandstone, very fine grained (upper) and minor mudstone. Coaly pieces less than 1%. Calcite still present in 2-4% quantity. 20% carbonaceous	
		123	126	Siltstone	Same as 120-123 interval except carbonaceous plant fragments present; 5%-10% coaly pieces present, some having polished surfaces; 2-4% calcite present. Average size of pieces has increased from previous (0.5 cm)	
		126	129	Siltstone	Dark grey, sandstone 30-40%, medium grey to medium dark grey, grain size up to fine upper. Minor mudstone, minor carbonaceous plant fragments, less than 1% coaly pieces, calcite 5-7%, minor pieces with slickensides	
	,	129	132	Sandstone	Medium grey to medium dark grey, grain size to fine upper, minor siltstone, 2% coaly pieces, 1-2% calcite, contact between very fine grained (lower) sandstone and fine (lower) sandstone seen in one piece	
		132	135	Sandstone	Medium grey, medium lower grain size, 1-2% coaly pieces, carbonaceous, 2-4% calcite	, 4-46 % 10 % 10 M 10 M 10 M 10 M 10 M 10 M 10

	D DEPTHS PH. LOGS	DRIL ĐE	LERS PTH		·	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	, SAMPLE
• • • •		135	138	Siltstone	Dark grey, 30% medium grey, very fine grained (upper) sandstone, 15% carbonaceous pieces with coaly stringers and polished surfaces, < 1% calcite, minor mudstone	
		138	141	Sandstone	Medium dark grey, grain size to very fine upper, 30% siltstone; minor mudstone; slightly carbonaceous, calcite all but disappeared	
		141	144	Sandstone	Medium dark grey, very fine grained (lower), approximately 30% siltstone and minor mudstone, 2% coaly pieces, 10% carbonaceous pieces with slickensided surfaces, 1% calcite	
		144	147	Sandstone	Medium grey, grains to fine upper, 10% coaly carbonaceous pieces with slicked and polished surfaces, minor siltstone, 5% calcite	
		147	150	Siltstone	Dark grey, 30-40% medium dark grey sandstone to very fine (upper) grained 10-15% coaly carbonaceous pieces and 5-10% good coaly pieces, 2% calcite, minor carbonaceous mudstone	
·		150	153	Siltstone	Dark grey, minor mudstone and minor very fine grained (lower) sandstone, coaly pieces, 5% coaly and 10% carbonaceous pieces, some showing slickensiding, calcite - 1-2%, carbonaceous plant fragments	. ,
		153	156	Sandstone	Medium dark grey, grain size up to very fine upper, siltstone 30%, coaly and carbonaceous pieces 10%, some showing slickensiding, calcite 2-3%	
		156	159	Sandstone	Medium grey, grain size to fine upper, most is very fine grained, less than 5% calcite fragments, less than 5% coaly carbonaceous fragment - larger grain sizes appear "cleaner"	
		159	162	Sandstone	Medium grey, fine grained, less than 5% calcite including cm sized fragments, much less than 5% carbonaceous fragments	

CORRECTE	D DEPTHS PH. LOGS	DRIL DE	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		162	165	Sandstone/Siltstone	Siltstone 40%, medium dark grey, slickensided chips to 3 cm across, approximately 5% carbonaceous fragments, sandstone 60% medium grey, calcite covered surfaces, sandstone to fine grain upper, less than 5% calcite fragments	
		165	168	Sandstone	To fine grained upper, mostly lower "clean" type sand (i.e., often less than 50% dark mineral grains) less than 5% carbonaceous fragments, less than 5% calcite fragments	
		168	171	Sandstone	Medium dark grey, very fine grained to fine grained upper, less than 10% carbonaceous mudstone chips, much less than 5% calcite, less than 5% carbonaceous fragments	
		171	174	Sandstone	Medium dark grey, very fine grained, also approximately 40% silty mudstone, less than 5% carbonaceous fragments, trace calcite much less than 5%	
		174	177	Sandstone	Medium dark grey to medium grey, very fine grained to fine grained upper, "clean", calcite slicks, much less than 5% calcite, less than 5% bright coaly fragments	
	-	177	180	Siltstone	Medium dark grey, also approximately 40% silty mudstone, approximately 5% fine grained sandstone, less than 5 coaly fragments	
		180	183	Sandstone/Mudstone	Medium dark grey, very fine to upper fine grained, "clean" type, also silty mudstone – carbonaceous, dark grey, trace calcite fragments, also approximately 5% bright coaly fragments	
		183	186	Sandstone	Medium dark grey, very fine to upper fine grained, trace calcite, 5-10% bright coaly fragments	
***************************************		186	189	Sandstone	Medium dark grey, lower fine grained, carbonaceous plant fragments, also approximately 5% carbonaceous siltstone, less than 5% coal and carbonaceous fragments, trace calcite	

CORRECTED DEPTHS FROM GEOPH. LOGS	h .			•	
FROM TO	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
	189	192	Sandstone	Medium dark grey and medium grey, very fine grained (upper) to lower medium grained (clean salt and pepper type), less than 5% bright coal fragments, less than 5% calcite fragments	
	192	195	Sandstone	Medium dark grey, very fine grained upper mostly, less than 5% coal and dirty coal fragments, much less than 5% calcite fragments	
	195	198	Sandstone	Medium dark grey, approximately 50% very fine grained (lower) to silt- stone, approximately 50% upper and lower fine grained, minor calcite including a large fragment and slicked surface, minor carbonaceous fragments	
				END OF HOLE LOGGER'S DEPTH = 196 m	

CORRECTED FROM GEOPI		DRILI DEF	LERS PTH		LITHOLOGIC DESCRIPTION	
FROM	то	FROM	то	MAIN LITHOLOGY		SAMPLE
		6	9	Mudstone	Dark grey, silty, carbonaceous, plant fragments; trace (less than 1%) of calcite.	
		9	12	Siltstone	Dark grey, less than 5% carbonaceous material, less than 1% calcite.	
		12	15	Mudstone .	Dark grey, carbonaceous 20% medium light grey sandstone, very fine grained (upper) 20% siltstone with carbonaceous stringers.	
		18	21	Sandstone	Very fine grained, medium dark grey, powdered (grains) are brown, sample is powder and cm size chips, non-carbonaceous.	
		21	24	Sandstone	Very fine (upper) grained, approximately 10% medium upper grained (poorly sorted), approximately 50% light/dark minerals, less than 5% calcite.	
		24	27	Sandstone	Very fine (upper) to very fine (lower) grained, about equal amounts each size, medium dark grey.	
		27	30	Mudstone	Silty, dark grey, slightly carbonaceous, 30% sandstone, some is medium lower grained, most is very fine lower, rare calcite surfaces.	
		30	33	Sandstone	Very fine lower grading to siltstone, medium dark grey, few fragments carbonaceous mudstone, dark grey.	
		33	36	Siltstone	Medium dark grey, slightly carbonaceous with carbonaceous particles and tiny rootlet-type fragments, occasional calcite veining and surfaces.	
		36	39	Siltstone	Most of sample is very fine powder, some chips are medium dark grey powder.	
		39	42	Mudstone	Silty, carbonaceous, dark grey.	
42.15	43.1	42	44	Coal	Powdered.	1

CORRECTED (FROM GEOPH,	1	DRILLERS DEPTH			,	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		44	45	Sandstone	Very fine (lower) grained, medium dark grey.	
		45	48	Sandstone	Very fine (upper) grained, medium dark grey.	
		48	51	Sandstone	Very fine (lower) grained, medium dark grey, about 40% siltstone, medium dark grey.	
,		51	54	Siltstone	Dark grey, carbonaceous	
53.6	54	57	Sandstone	Very fine (lower) grained, medium dark grey with occasional fragments of very fine (upper) grained.		
	61.2	57	60	Sandstone .	. Very fine (upper) grained, medium dark grey with occasional carbonaceous siltstone with rootlets?	
61.2		60	63	Siltstone	Medium dark grey.	
		63	66	Siltstone	Medium dark grey, 20% carbonaceous mudstone, some fragments have polished and slickensided surface (slicks are those with linear grooves etc., polished are just smooth and shiny) and calcite on slickensided surfaces, a few individual crystalline grains of calcite.	
	69.0	· 66	69	Siltstone	Dark grey, carbonaceous with minor carbonaceous mudstone and rare coal fragments.	
69.0 with 1.4 m coal from 70.2 to 71.6 m	71.8	69	72	Coal/Siltstone	Very mixed sample characterized by fragments stuck together like clay balls. Appears to be a lot of clay in sample, top part clearly has coal and carbonaceous mudstone. Lower part is mixture of sandstone, very fine grained (lower), siltstone and carbonaceous mudstone and coal fragments in very clay-like matrix. One chip of sandstone appears to have micaceous and clayey matrix.	2

CORRECTED FROM GEOF		DRILI DEF	ERS PTH		·	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
71.8	73.75	72	74	Siltstone	Medium dark grey showing some calcite veining and calcite on slicken- sided surfaces, contains 30% sandstone, very fine grained (lower), contain less than 5% coal fragments (very small).	
73.75 74.30	74	75	Coal	Powdered.	3	
		75	78	Sandstone	Very fine grained (lower), medium dark grey with 20% medium dark grey siltsonte. Also contains rare coaly fragments and fragments of calcite, few calcite surfaces.	
		78	81	Mudstone	Carbonaceous, dark grey, 20% siltstone grading to sandstone, very fine grained (lower). All balled in clay matrix.	
		81	84	Sandstone	Very fine grained (lower-medium lower), medium dark grey - less than 20% carbonaceous mudstone, occasional calcite fragments and surfaces.	
		84	87	Sandstone	Very fine lower - very fine upper grained, medium dark grey, 40% silt- stone - medium dark grey, occasional calcite fragments.	
		87	90	Sandstone	Medium lower - medium upper grained mostly but grading to siltstone (20%), sandstone is medium grey approaching sait/pepper texture in coarser grade, siltstone is medium dark grey, slightly carbonaceous, occasional calcite surfaces.	
		90	93	Sandstone	Medium upper grained, 15% is very fine (medium) grained, salt/pepper type, quartz and light chert, 40% dark chert, sub-angular, well sorted, finer grained is medium dark grey, occasional coal fragments.	
		93	96	Siltstone	Medium dark grey, occasional fragments of sandstone, medium upper and very fine lower grained, occasional calcite fragments and surfaces.	
		96	99	Sandstone	Very fine (lower) grained, medium dark grey with siltstone, rare coal fragments and calcite surfaces.	

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CORRECTED FROM GEOF		DRILLERS DEPTH				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		99	102	Sandstone	Very fine(lower) grained, medium dark grey with 20% siltstone (fractured). Abundant calcite veining surfaces and polished surfaces. Perhaps 5% coaly fragments.	
		102	105	Sandstone	As above, same evidence of fracturing.	*
		105	108	Sandstone	Very fine (lower) grained, medium dark grey, 30% carbonaceous siltstone, 5% sandstone, medium lower to upper grained, coaly fragments.	
		108	111	Siltstone	Medium dark grey and dark grey, carbonaceous. Few calcite fragments, surfaces have coaly fragments.	·
		111	114	Sandstone	Medium grey (salt/pepper), medium (upper) grained. 30% very fine (lower) and medium dark grey (rare) calcite fragments.	
		114	117	Sandstone	Medium grey, medium lówer to fine grained, mud clasts in sandstone fragments, trace of calcite veining, tiny mica flecks in sandstone, minor siltstone (approximately 20%).	
		117	120	Siltstone	Dark grey, 20% medium grey sandstone, fine grained (lower). Less than 1% calcite, mica flakes in some pieces.	,
		120	123	Sandstone	Medium grey, very fine (upper) grained. 30-40% siltstone; 5% coaly pleces. Less than 1% calcite. Carbonaceous.	
		123	126	Sandstone/SIItstone	Sandstone, medium grey, medium lower grained. Siltstone, dark grey, carbonaceous. 20% carbonaceous mudstone – less than 1% calcite. Mica flakes evident in sandstone pieces.	
		126	129	Sandstone	Medium grey to medium dark grey, grains up to medium lower grained. Minor slightly carbonaceous siltstone and mudstone. Mica flakes present (up to 20%) in sandstone.	

CORRECTED DEPTH FROM GEOPH. LOG	1	LERS PTH		LITHOLOGIC DESCRIPTION	
FROM TO	FROM	то	MAIN LITHOLOGY		SAMPLE
	129	132	Sandstone	Medium grey, fine (lower) grained. Minor siltstone. Carbonaceous. 5-10% coaly pieces. 1-2% calcite, able to identify mica flakes in coarser sandstone.	,
`	132	135	SIItstone	Dark grey, carbonaceous, plant fragments and coaly stringers. 20% is medium grey, fine (lower) grained sandstone. Less than 1% calcite, mica flakes in sandstone. Minor mudstone.	,
	135	138	Sandstone	Medium dark grey, fine (upper) grained. 30% siltstone. 10% coaly pieces. Sandstone micaceous. Less than 1% calcite.	Coal Seam not recovered
	138	141	Siltstone	Dark grey, carbonaceous. 30% sandstone, medium dark grey to medium light grey, micaceous.	
	141	144	Siltstone	Dark grey, carbonaceous. 20% medium dark grey sandstone, very fine grained (upper). Some polished surfaces, 2 to 3% calcite.	
	144	147	Sandstone	Medium dark grey, fine(lower) grained, slightly micaceous. 5% coaly/carbonaceous pieces. 25% siltstone/mudstone, 3 to 4% calcite.	Coal Seam not
	147	150	Sandstone	Medium dark grey, fine (upper) grained. 30% carbonaceous siltstone, minor coaly bits and stringers with polished surfaces, 5 to 7% calcite in pieces, veins and on surfaces. Fracturing. Minor small mica crystals.	
	150	153	Siltstone	Dark grey, carbonaceous material with polished surfaces. 40% medium dark grey sandstone, very fine (upper) grained, trace of coaly bits in finer pieces. Less than 1% calcite.	
	153	156	Sandstone	Dark grey, very fine (upper) grained, minor mica crystals, slightly carbonaceous. 10-15% siltstone, 4% calcite in pieces and on surfaces.	
	156	159	Sandstone	Medium dark grey, slightly carbonaceous, fine (lower) grained. Very minor siltstone. 1% calcite, slightly micaceous.	

CORRECTES FROM GEOF		DR I LI DEF				
FROM	то	FROM	ΤO	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	9	Casing	,	
		9	12	Mudstone	Medium grey powder; larger pieces (25% of sample) is dark grey siltstone	
		12	15	Mudstone	As above.	
		15	18	Mudstone	Medium grey powder, silty, 10% very fine (lower) grained, medium grey sandstone pieces.	
		18	21	Mudstone	Medium grey, powder, 10% dark grey siltstone pieces.	
	21.4	21	24	Mudstone	Medium grey, powder and pieces, silty, trace carbonaceous.	
21.4 (2.5 m (Coal)	25.0	24	27	Coal	Powder, 20-30% siltstone/mudstone in powder and pieces, pieces being 40-50% coal stringers.	18
25.0	27.6	27	30	Mudstone	Medium grey powder, 15% siltstone pieces, approximately 20% coaly pieces	
27.6 (1.0 m Coal)	30.4	30	33	Mudstone/Coal	Mudstone medium grey powder and pieces, pieces containing coaly stringers, coal powder and mudstone pieces from lower half of sample interval? Sample taken but contains mudstone, approximately 50%, must be a thin seam.	19
		33	36	Mudstone	Medium dark grey to dark grey, minor coal material, pieces/powder: 60/40.	
		36	39	Mudstone	Medium grey, trace carbonaceous.	
		39	42	Mudstone	Dark grey with a browish grey powder coating. Trace carbonaceous plant fragments, minor siltstone.	
		42	45	Mudstone	As above but no carbonaceous plant fragments.	

CORRECTE						
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		192	195	Sandstone	Medium dark grey, fine (upper) grained, slightly micaceous; 10% carbonaceous siltstone; trace coaly pieces. 2% calcife pieces.	
		195	198	Sandstone	As above except 5 to 8% coaly, carbonaceous pieces and grain size to medium (upper) grained,	
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	DEPTHS PH. LOGS	DR I LI DEF				
FROM	то	FROM	TO	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	6		Casing and open hole - no samples	
		6	9	Mudstone	Powder - pieces of sandstone, siltstone and mudstone in powder, dark brown - grey	
	7.0	9	12?	Sandstone	Powder - light grey, very fine grained (lower), sandstone pieces in powder	
7.0 (2.1 m o	10.6 coal)	9	12?	Coal	Powder – minor mudstone fragments (less than 20%).	21
10.6	13.4	12	15	Siltstone	Powder - minor fragments of mudstone, siltstone, sandstone is light grey	
13.4 (1.1 m o	17.1 coal)	15	18	Coal	Powder - very minor mudstone	22
17.1		18	21	Mudstone	Dark grey, almost all of sample is a fine powder, 15% coal powder	
	21.4	21	24	Mudstone	Dark grey, silty, carbonaceous plant fragments, no coal powder	
21.4 (.55 mm d	25.5 of coal)	24	27	Coal/Mudstone	50/50 ratio, mudstone is medium dark grey, coal at bottom of 24-27 m Interval and top of 27-30 m interval. Coal sample marked as next interval (27-30)	23
25.5 (0.9 m c	29.0 oal)	27	30	Coal/Mudstone	As above except 5% silty mudstone pieces, the rest is powder	24
29.0 (1.0 m c	32.0 oal)	30 ·	33	Mudstone/Coal	30-40% coal, 10% silty mudstone pieces, dark grey with coaly stringers	25
32.0	35.0	33	36	Mudstone	Dark grey, small pieces and powder, 10-20% carbonaceous plant fragments and coaly stringers.	

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CORRECTED I FROM GEOPH		DRILE			·	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	· SAMPLE
35.0	36.5	36	39	Coal	Powder, 30% silty mudstone pieces.	26
36.5		39	42	Mudstone	Dark grey, carbonaceous plant fragments	
	44.2	42	45	Muds tone	Dark grey, larger pieces of mudstone (60%), minor carbonaceous pieces and plant fragments.	
44.2 47.2 (1.9 m coal)		45	48	Coal/Mudstone	Powder coal, dark grey mudstone in powder and chips (40%)	27
		48	51	Sandstone	Medium grey, very fine (upper) grained, 30% coal powder and small pleces, 20% coarse siltstone	
,		51	54	Siltstone	Dark grey, 20% medium grey fine (lower) grained sandstone, minor carbonaceous mudstone, trace of coaly pleces	
		54	57	Siltstone	Medium dark grey, some pieces are fairly coarse, 45% mud in sample	
		57	60	Siltstone	Medium dark grey, minor silty mudstone	
		60	63	Mudstone	Medium dark grey, approximately 30% silty	
		63	66	Siltstone	Medium dark grey, very minor mudstone and silty mudstone, trace calcite, some sand grains	
		66	69	Sandstone	Medium grey, fine (lower) grained, 30-40% siltstone/mudstone. No calcite seen.	
	•	69	72	Sandstone	Medium grey, fine (upper) grained, minor carbonaceous plant fragments, 1% calcite, 20-30% siltstone	
	W	72	75	Siltstone	Dark grey, minor carbonaceous material, minor silty mudstone	

	D DEPTHS PH. LOGS	DR I LI DEF	LER\$ PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		75	78	Siltstone	Dark grey, minor mudstone, 2-3% calcite in veins, surfaces and pieces indicate fractures, very minor carbonaceous material	
• 19		78	81	Siltstone	Dark grey, very muddy, 1% calcite, 5% carbonaceous pleces, 5% coaly pleces	
		81	,84	Siltstone	Dark grey, muddy, trace calcite, carbonaceous minor mudstone in smallest pieces	
		84	87	Mudstone	Dark grey, silty, carbonaceous, trace calcite, trace rust-brown pieces	
		87	90	Mudstone	Dark grey, slity, minor carbonaceous pieces.	
		90	93	Mudstone	Dark grey, silty, trace calcite and carbonaceous material	
		93	96	Sandstone	Medium dark grey, very fine upper, 30-40% siltstone and silty mudstone, mostly siltstone trace carbonaceous material; trace calcite	
		96	99	Sandstone	As above except minor (10-20%) siltstone/mudstone	
		99	102	Sandstone	Medium grey, fine lower, minor siltstone, trace carbonaceous	
		102	105		Missed sample?	
		105	108	Siltstone	Dark grey, slightly carbonaceous, trace of calcite	
		108	111	Siltstone	As above	
		111	114	Siltstone	Dark grey, slightly carbonaceous	·
		114	117	Siltstone	Dark grey, slightly cerbonaceous, slight trace of calcite	
		117	120	Sandstone	Lower very fine grained, dark grey, trace of carbonaceous fragments and calcite fragments	

TO FROM 120 123	123 126	MAIN LITHOLOGY Sandstone/Mudstone Siltstone	LITHOLOGIC DESCRIPTION Lower very fine grained, dark grey sandstone/siltstone, carbonaceous mudstone is dark grey, sandstone/mudstone approximately 3:1, trace coaly and carbonaceous fragments, calcite	SAMPLE
123	126		mudstone is dark grey, sandstone/mudstone approximately 3:1, trace coaly and carbonaceous fragments, calcite	
		Siltstone		
126	1	i	Medium dark grey, trace carbonaceous material, less than 5% calcite in fragments, 1 mm thick fracture-fill surfaces	
1	129	Siltstone	Medium dark grey, trace carbonaceous fragments and calcite, approximately 5% carbonaceous mudstone fragments	
129	132	Sandstone	Very fine grained, medium dark grey, trace carbonaceous fragments, less than 5% calcite fragments	
132	135	SIItstone	Medium dark grey, trace calcite fragments and carbonaceous material, trace 1 mm size quartz grains (secondary)	
135	138	Siltstone	Dark grey, trace calcite fragments	
138	141	Siltstone	Dark grey, trace calcite and carbonaceous fragments	
141	144	Siltstone	Medium dark grey, less than 5% calcite fragments	
144	147	Sandstone	Very fine grained, slightly carbonaceous, less than 5% calcite in fragments and on chip surfaces	
147	150	Sandstone	Very fine grained (lower), medium light grey, less than 5% calcite fragments and stringers	
150	153	Sandstone	Very fine grained (upper) and lower fine grained, trace carbonaceous fragments, 5% calcite fragments stringers and surface coatings, medium dark grey (dirty) type sandstone.	
	132 135 138 141 144	132 135 138 138 138 141 141 144 144 147 147 . 150	132 135 SIltstone 135 138 SIltstone 138 141 SIltstone 141 144 SIltstone 144 147 Sandstone 147 . 150 Sandstone	than 5% calcite fragments 132 135 Siltstone Medium dark grey, trace calcite fragments and carbonaceous material, trace 1 mm size quartz grains (secondary) 135 138 Siltstone Dark grey, trace calcite fragments 138 141 Siltstone Dark grey, trace calcite and carbonaceous fragments 141 144 Siltstone Medium dark grey, less than 5% calcite fragments 144 147 Sandstone Very fine grained, slightly carbonaceous, less than 5% calcite in fragments and on chip surfaces 147 150 Sandstone Very fine grained (lower), medium light grey, less than 5% calcite fragments and stringers 150 153 Sandstone Very fine grained (upper) and lower fine grained, trace carbonaceous fragments, 5% calcite fragments stringers and surface coatings, medium

ORRECTED DEF		LLERS EPTH			
FROM TO	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
	153	156	SIItstone/Coal	Dark grey siltstone and silty mudstone, carbonaceous, less than 25% dull and bright coal fragments, trace calcite	
	156	159	Siltstone	Dark grey, approximately 10% carbonaceous mudstone, traces of carbonaceous fragments and calcite	
	159	162	Siltstone	Dark grey, slightly carbonaceous, less than 5% calcite fragments	
	162	165	Siltstone	Medium dark grey, trace of calcite as fragments and stringers	
	165	168	Sandstone .	Very fine grained (lower), medium dark grey, trace carbonaceous material trace calcite surfaces	
	168	171	Siltstone	Medium dark grey, muddy, trace calcite, less than 10% carbonaceous mudstone fragments	
	171	174	Sandstone	Medium grey, fine grained (upper and lower), relatively "cleaner" sandstone, less than 20% siltstone and mudstone, coaly and carbonaceous fragments, trace calcite fragments	
	174	177	Sandstone	Very fine grained (upper), medium dark grey – relatively "dirty" sand—stone, less than 5% carbonaceous fragments, with trace calcite	
	177	180	Sandstone	Very fine grained (lower), medium grey, trace of clean, fine grained sandstone and carbonaceous mudstone fragments, with calcite	
	180	183	Sandstone	Upper fine to lower medium grained, medium grey color, relatively "clean" type sandstone, carbonaceous plant fragments and trace carbonaceous fragments, trace calcite	
	183	186	Sandstone	Very fine grained, medium dark grey, much less than 5% calcite, trace carbonaceous mudstone	

ROM GEOPH. L		LERS PTH		·	SAMPLE
FROM TO	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	
	186	189	Sandstone	Very fine grained, medium grey, trace fragments of calcite and carbonaceous material	
	189	192	Siltstone	Medium dark grey, much less than 5% calcite fragments, less than 5% carbonaceous fragments, less than 10% very fine grained sandstone	
	192	195	Mudstone	Sometimes slightly silty, very carbonaceous, less than 5% calcite, less than 5%? carbonaceous fragments, dark grey color	
	195	198	Mudstone	Carbonaceous, dark grey, often slity, loss than 5% calcite, some fine grained sandstone, dark carbonaceous fragments	
	198	201	Sandstone .	Medium dark grey, upper to lower fine grained, very carbonaceous with carbonaceous plant fragments on laminated surfaces, trace bright coaly and carbonaceous fragments, trace calcite.	
				END OF HOLE T.D. 201 m	

CORRECTES FROM GEOF		DR I LI DEF				
FROM	то	FROM	ΤO	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	9	Casing	,	
		9	12	Mudstone	Medium grey powder; larger pieces (25% of sample) is dark grey siltstone	
		12	15	Mudstone	As above.	
		15	18	Mudstone	Medium grey powder, silty, 10% very fine (lower) grained, medium grey sandstone pieces.	
		18	21	Mudstone	Medium grey, powder, 10% dark grey siltstone pieces.	
	21.4	21	24	Mudstone	Medium grey, powder and pieces, silty, trace carbonaceous.	
21.4 (2.5 m (Coal)	25.0	24	27	Coal	Powder, 20-30% siltstone/mudstone in powder and pieces, pieces being 40-50% coal stringers.	18
25.0	27.6	27	30	Mudstone	Medium grey powder, 15% siltstone pieces, approximately 20% coaly pieces	
27.6 (1.0 m Coal)	30.4	30	33	Mudstone/Coal	Mudstone medium grey powder and pieces, pieces containing coaly stringers, coal powder and mudstone pieces from lower half of sample interval? Sample taken but contains mudstone, approximately 50%, must be a thin seam.	19
		33	36	Mudstone	Medium dark grey to dark grey, minor coal material, pieces/powder: 60/40.	
		36	39	Mudstone	Medium grey, trace carbonaceous.	
		39	42	Mudstone	Dark grey with a browish grey powder coating. Trace carbonaceous plant fragments, minor siltstone.	
		42	45	Mudstone	As above but no carbonaceous plant fragments.	

CORRECTED FROM GEOD	DEPTHS	DR1LI DEF	LERS PTH	:		
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		45	48	Mudstone	As above but with 20% siltstone pieces.	
		48	51	Mudstone	Brownish grey with minor carbonaceous siltstone pieces.	
		51	54	Mudstone	Dark grey, carbonaceous and coaly, especially in the bottom 1/4 of the bag. Coal/carbonaceous fraction about 1/3 of sample.	
		54	57	Mudstone	Browish grey, minor coaly fraction, 25% dark grey slitstone.	
		57	60	Mudstone	Brownish grey, trace carbonaceous material, 40% dark grey siltstone.	
Coal from 60.8	61.4m	60	63	Mudstone/Coal	Mudstone is dark grey with a brownish grey outer coating on pieces, 40% coal powder, seam is .6 m thick.	20
		63	66	SIItstorie	Dark grey with brownish grey coating, minor coaly and carbonaceous material, 20-30% mudstone powder.	
		66	69	Siltstone	As above with only a trace of carbonaceous material and 40% mudstone.	
•		69	72	\$11tstone/Sandstone	Siltstone is dark grey and slightly carbonaceous, sandstone is dark grey to reddish brown, medium (upper) grained, minor calcite and coaly pieces	
		72	75	Siltstone	Dark grey, carbonaceous with minor coal stringers, 15% reddish brown and medium (lower) grained sandstone.	
		75	78	Siltstone	Medium dark grey, also approximately 10% very carbonaceous mudstone, trace of yellow brown, (lower) medium grained sandstone, matrix is yellow brown grains of mostly quartz.	
		78	81	Sandstone	Very fine grained (lower), medium dark grey – trace of brown, fine grained sandstone.	

CORRECTED DEPTHS FROM GEOPH. LOGS		DR I L L DEF	ERS TH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
					NOTE: WATER LEVEL 1ST WATER	
		81	84	Sandstone	Very fine grained (upper), medium dark grey, micaceous, "dirty" sand—stone type, trace of coaly carbonaceous fragments and occasional tiny carbonaceous plants, less than 5% pale brown, upper fine grained carbonaceous sandstone, trace of calcite fragments and very thin calcite stringers.	
		84	87	Siltstone	Medium dark grey, some chips are muddy with carbonaceous stringers, appr 10% micaceous very fine grained sandstone as above, trace of carbon-aceous fragments and calcite, also brown sandstone.	
		87	90	Sandstone	Medium grey, very fine grained to lower fine, less than 5% coaly carbonaceous fragments, trace calcite, less than 5% fine grained, brown sandstone.	
		90	93	Sandstone	Medium to medium dark grey, very fine grained, carbonaceous, sometimes micaceous, less than 5% coaly carbonaceous fragments, much less than 5% brown sandstone, trace calcite, brown sandstone looks weathered and as some chips are 1 1/2 x 2 cm size they may originate as caving below casing.	
		93	96	Sandstone .	Some very fine grained sandstone, as above, but with a trace of carbon-aceous fragments.	
		96	99	Sandstone	Very fine to upper fine grained, medium to medium dark grey color, micaceous, trace of calcite and carbonaceous material.	
		99	102	Sandstone	Fine grained (upper to lower), medium to medium dark grey, micaceous, carbonaceous, trace of calcite, trace of brown sandstone.	
	1	102	105	SIltstone	Medium dark grey, muddy, carbonaceous, trace of carbonaceous fragments and plant-like prints, trace calcite.	

CORRECTED DEPTHS	DR I LI DEI	LERS PTH		·	
FROM TO	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
	105	108	Sandstone	Very fine grained, mostly lower medium dark grey, carbonaceous, trace of coaly and carbonaceous fragments, trace of calcite.	
	108	111	Sandstone	Very fine grained, dark grey, carbonaceous with a trace carbonaceous fragments, approximately 30 carbonaceous mudstone chips.	
	111	114	Sandstone	Medium to medium dark grey chips, lighter ones are fine grained, micaceous, relatively "cleaner" sands, darker sandstone, is carbonaceous and finer grained.	
	114	117	Sandstone	Mostly medium grey, fine grained, micaceous, "cleaner" sands like 111-114, thin carbonaceous and micaceous bands which form laminations on a few chips.	
	1 17	120	Sandstone	Same as above, also approximately 40% carbonaceous mudstone chips.	
	120	123	Sandstone/Mudstone	Sandstone as above (40%), mudstone (60%), dark grey, carbonaceous, silty, sometimes coaly, occasional fracture (calcite & slicks) surfaces.	
	123	126	Sandstone/Coal	Sandstone is medium dark grey, very fine grained (upper), micaceous, a few small and clean, fine grained sandstone chips, coal (30%), dull banded? up to 1 cm size chips, good cleat.	Coal Seam not recovered
	126	129	Sandstone	Medium grey, fine grained (upper & lower), micaceous - approximately 25% carbonaceous mudstone, silty, trace of bright coal fragments (cleat), trace calcite.	
	129	132	Sandstone	Medium grey, very fine grained, micaceous, 10-20% carbonaceous mudstone, trace of coaly, carbonaceous fragments.	
	132	135	Sandstone/Mudstone	Approximately 50% each - same as above - trace of calcite fragments.	

			ILLERS DEPTH		DEPTHS	
SAMPLE	LITHOLOGIC DESCRIPTION	MAIN LITHOLOGY	и то	FROM	то	FROM
	Very fine grained to lower fine grained, medium to medium dark grey, micaceous, relatively "dirty" type sandstone, less than 5% fresh white calcite fragments, trace carbonaceous fragments.	Sandstone .	138	135		
	Very fine grained to siltstone, approximately 10% mudstone, trace of calcite, coaly fragments, fine grained "clean" sandstone chips.	Sandstone .	141	138		
	Very fine grained, medium dark grey, slightly micaceous, trace of bright coaly, carbonaceous fragments.	Sandstone	144	141		
	70% very fine grained medium grey sandstone as above, approximately 30% clean, fine grained sandstone as below, trace calcite.	Sandstone	147	144'		
	Medium grey, medium (lower) grained, salt and pepper type, approximately 50% is micaceous, 60/40 quartz/dark minerals, approximately 5% dark grey siltstone, trace of bright coaly and carbonaceous fragments.	Sandstone	150	147		
	Some medium (lower) grained as above, trace calcite crystals, trace of red-brown concretion-like fragments, less than 5% carbonaceous mudstone.	Sandstone	153	150		
	Same as above with slightly more (still much less than 5%) calcite (milky and crystalline), trace of pale brown sandstone, small fragments.	Sandstone	156	153		
	Medium light grey, lower medium grained, some caving material (had to trip out and tricome here), small fragments and powder.	Sandstöne '	159	156		
	Upper fine grained, medium light grey, mostly powder (65%), rest is chips, some calcite on chips, few orange fragments.	Sandstone	162	159		
	Mostly powder, light grey, fine to very fine grained, few carbonaceous looking flakes, approximately 25% chips.	Sandstone	165	162		
	As above, 95% powder, few carbonaceous flecks, minor orange sandstone chips.	Sandstone	168	165		
	Some medium (lower) grained as above, trace calcite crystals, trace of red-brown concretion-like fragments, less than 5% carbonaceous mudstone. Same as above with slightly more (still much less than 5%) calcite (milky and crystalline), trace of pale brown sandstone, small fragments. Medium light grey, lower medium grained, some caving material (had to trip out and tricome here), small fragments and powder. Upper fine grained, medium light grey, mostly powder (65%), rest is chips, some calcite on chips, few orange fragments. Mostly powder, light grey, fine to very fine grained, few carbonaceous looking flakes, approximately 25% chips. As above, 95% powder, few carbonaceous flecks, minor orange sandstone	Sandstone Sandstone Sandstone Sandstone	156 159 162 165	153 156 159 162		

DEPTHS					•
то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
	168	171	Sandstone	Medium light grey, 75% powder, rest are chips, medium grained, very few coal flakes, one small quartz crystal, some calcite.	
	171	174	Sandstone	Medium light grey, 70% powder, fine to very fine grained, some silty looking chips, few coaly and calcite flecks, occasional calcite crystals	
	174	177 ,	Sandstone	Medium grey, 60% powder, very fine grained, few calcite chips, few carbonaceous stringers, few coaly flects, occasional calcite crystals.	
	177	180	Sandstone	Medium light grey, 60% powder, very fine grained, few calcite crystals, no coaly flecks visible.	
	180	183	Sandstone	Medium light grey, 50% chips, very fine grained, few calcite coated chips, no coaly flecks visible.	
	183	186	SIItstone/Coal	Siltstone - 60%, Coal - 40%, coal looks mostly bright, siltstone medium grey, sandy, some orange sandstone chips.	No Sample Coal Seam no recovered
	186	189	Siltstone/Coal	Same as above, coal is very powdery.	
	189	192	Mudstone	Medium grey, silty, 60% chips, 40% powder, few calcite chips.	
	192	195	Siltstone	Medium grey, muddy, few calcite chips, rare coal grains, 60% chips.	
	195	198	SIItstone	Medium grey, slightly muddy, few calcite chips, 60% powder, few coaly flecks and sandy chips.	
	198	201	SIItstone	Medium grey, slightly muddy, slightly sandy, few calcite chips, 80% chips, few coaly flecks (rare).	
				END OF HOLE	
	H. LOGS	TO FROM 168 171 174 177 180 186 189 192 195	TO FROM TO 168 171 171 174 177 180 180 183 181 186 189 189 192 195 195 198	TO FROM TO MAIN LITHOLOGY	TO FROM TO MAIN LITHOLOGY LITHOLOGIC DESCRIPTION 168 171 Sandstone Medium light grey, 75% powder, rest are chips, madium grained, very few coal flakes, one small quartz crystal, some calcite. 171 174 Sandstone Medium light grey, 70% powder, fine to very fine grained, some slity looking chips, few coaly and calcite flecks, occasional calcite crystals. 174 177 Sandstone Medium grey, 60% powder, very fine grained, few calcite chips, few carbonaceous stringers, few coaly flects, occasional calcite crystals. 177 180 Sandstone Medium light grey, 60% powder, very fine grained, few calcite crystals, no coaly flecks visible. 180 183 Sandstone Medium light grey, 50% chips, very fine grained, few calcite coated chips, no coaly flecks visible. 183 186 Siltstone/Coal Siltstone - 60%, Coal - 40%, coal looks mostly bright, siltstone medium grey, sandy, some orange sandstone chips. 189 192 Mudstone Medium grey, silty, 60% chips, 40% powder, few calcite chips. 189 191 Siltstone Medium grey, silty, 60% chips, 40% powder, few calcite chips. 189 198 Siltstone Medium grey, silghtly muddy, few calcite chips, 60% powder, few coaly flecks and sandy chips. 189 201 Siltstone Medium grey, slightly muddy, few calcite chips, 60% powder, few coaly chips, few coaly flecks (rare).

CORRECTED FROM GEOF		DRILLERS DEPTH				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
					A bit of coal at very top while driving casing - small sample only recovered - difficult to catch.	
		9	12	Casing to 9 m Sandstone/Siltstone	All chips, muddy, sandstone is light brown and fine grained, siltstone (50%) is medium dark grey, few calcite chips.	
		12	15	Mudstone	50/50 chips to powder, medium grey, powder is dark grey.	
· •		15	18	Mudstone	Medium grey, 30/70 chips to powder, coaly (approximately 25% coal).	
		18	21	Mudstone	Same as above.	
20, 01	22.5	21	24	Coal	All powdered, dull with occasional bright flecks, approximately 10% mudstone chips (may have fallen in).	14
22.5	Ż6 . 6	24	27	Mudstone	Brownish grey, 96% powder, doesn't appear to be coaly.	
26.6	29.3	27	30	Coal	Powdered as before - some slightly silty mudstone at bottom, bagged these separately.	15
29.3	32.9	30	33	Mudstone	Brownish grey - 90% powder, coaly, (approximately 20% coal powder).	
32.9	34.9	33	36	Coal	Powdered, dull with rare bright flecks, 10 to 15% mudstone chips and powder – becoming muddier at base.	16
	·	36	39	Mudstone	Brownish grey, 90% powder, chips are quite silty.	
		39	42	Mudstone/Coal	Mudstone is brownish grey, chips approximately 30%, mudstone: coal is approximately 70/30, coal is dull and powdery.	
· · · · · · · · · · · · · · · · · · ·		42	45	Mudstone	Silty, brownish grey, chips approximately 30% - rest is powder.	

CORRECTED DEPTHS		1			·	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		45	48	Mudstone	Pale brown, 90% powder.	
		48	51	Mudstone	Pale brown, 80% powder, chips are slightly silty.	
		51	54	Mudstone	As above.	
		54	57	Mudstone	As above.	
56.1	58.4	57	60	Coal	Dull, powdered, bright specks, coaly black mudstone chips (approximately 5%), mudstone at base.	17
		60	63	Mudstone	Brownish grey, 70% chips, 30% powder, slightly silty, carbonaceous.	
		63	66	Mudstone	As above.	
		66	69	Mudstone	Brownish grey, 25% chips, 75% powder, slightly silty, powder is carbonaceous.	
		69	72	Mudstone .	Dark grey, 90% chips, carbonaceous and coaly stringers, carbonaceous powder.	
		72	75	Mudstone	Brownish grey, 15% chips, 85% powder, slightly silty, rare coaly flecks.	
		75	78	Mudstone	As above but now approximately 25% chips.	
		78	81	Mudstone	As above, 30% chips.	
		81	84	Siltstone	Dark grey, 80% chips, muddy.	
		84	87	Mudstone	Brownish grey, 20% chips, coaly specks, slightly silty.	
		87	90	Siltstone	Medium dark grey, 100% chips - starting to get wet.	

CORRECTED FROM GEOF		DR I LI	LERS PTH	MAIN LITHOLOGY		
FROM	то	FROM	то		LITHOLOGIC DESCRIPTION	SAMPLE
		90	93	Mudstone	Medium dark grey to greyish brown, 95% chips, silty.	
		93	96	Siltstone	Medium dark grey, 90% chips, muddy.	
		96	99	Siltstone	Dark grey, slightly carbonaceous appearance.	
		99	102	Siltstone	Dark grey, very slightly muddy, trace calcite, minor carbonaceous surfaces.	
		102	105	Mudstone	Dark grey, silty, trace carbonaceous, trace calcite.	
		105	108	Mudstone	Dark grey, silty, minor carbonaceous plant fragments and surfaces, trace calcite.	
		108	111	Siltstone	Dark grey, minor mudstone, minor carbonaceous, trace calcite.	
		111	114	Mudstone	Dark grey, some pieces with a tan coating, carbonaceous, silty, 1-2% calcite.	
		114	117	Siltstone	Medium grey, 30% mudstone pieces coated in mud.	
		117	120	Siltstone	Dark grey, 30% mudstone, one piece of mudstone is tan color, may be from above? weathered.	
		120	123	Mudstone	Dark grey, some silt, trace carbonaceous.	
		123	126	Siltstone	Dark grey, approximately 20% mudstone, trace carbonaceous.	
		126	129	SIItstone	Dark grey, approximately 30% mudstone, trace carbonaceous.	
		129	132	Sandstone	Medium dark grey, up to lower fine grained, mica flakes present, 10-15% carbonaceous mudstone/siltstone, very minor pieces of rust-brown sand-stone.	

ORRECTED DEP ROM GEOPH. L	1	LLERS EPTH			
FROM TO	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
	132	135	Siltstone	Dark grey, 30% medium grey, lower fine grained sandstone, 10-15% mudstone, trace mica flakes.	
	135	138	Siltstone	Dark grey, carbonaceous, 10-15% medium grey, medium (upper) grained sandstone, 30% carbonaceous mudstone.	
	138	141	Sandstone	Medium dark grey, upper fine grained, 10% dark grey siltstone, one piece is slightly iron stained, so therefore is from above.	
	141	144	Siltstone	Dark grey, carbonaceous, trace coaly pieces, 1% calcite, 3 rust-brown pieces.	
	144	147	Siltstone	Dark grey, carbonaceous, minor mudstone, trace mica flakes.	
	147	150	Mudstone	Dark grey, silty, carbonaceous, trace coaly pieces.	
	150	153	Sandstone	Dark grey, upper fine grained, 20% siltstone/mudstone, trace calcite, possible small mica flakes.	·
	153	156	Sandstone	As above except medium dark grey, minor carbonaceous siltstone, 1-2% red-brown pieces.	
	156	159	Sandstone	Medium grey, upper fine grained, trace red-brown to light brown pieces, minor carbonaceous pieces, 5% siltstone, dark grey, trace calcite, micaceous?	
	159	162	SIItstone	Dark grey, carbonaceous, minor coaly pieces, trace calcite, minor mudstone and very fine grained sandstone.	
	162	165	Sandstone	Dark grey, very fine grained (upper), minor siltstone, minor carbonaceous.	
	165	168	Siltstone	Dark grey, 20% very fine grained (lower) to very fine grained (upper), dark grey sandstone, 25% carbonaceous coaly pieces, trace calcite, trace rust-brown sandstone pieces, from above?	

FALLING CREEK PROJECT - CHIP LOG

	D DEPTHS PH. LOGS	}		•		
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		168	171	Sandstone	Dark grey, lower fine grained, trace mica flakes? trace calcite, minor siltstone pieces, slightly carbonaceous.	
		171	174	Sandstone	As above except medium dark grey.	
		174	177	Sandstone	As above, 25% slitstone/mudstone, dark grey, some sandstone pieces to upper fine grained.	
		177	180	Sandstone	As above except medium (lower) grained, still finding trace pieces of red-brown to rust-brown sandstone, from above?	
		180	183	Sandstone	Medium grey, lower medium grained, minor micaceous pieces, trace calcite trace carbonaceous/coaly pieces, still finding trace red-brown pieces.	
		183	186	Sandstone	Medium grey, upper fine to lower medium grained, sait and pepper type (relatively "clean") sandstone, minor mudstone and siltstone, trace of calcite, trace red-brown pleces, sand grains to millimetre-sized pleces.	
		186	189	Sandstone	Same as 183-186, also trace of carbonaceous fragments.	
		189	192	Sandstone	Sample is approximately 60% same as 183-189 metres, approximately 40% centimetre sized chips of micaceous "dirtier" fine grained sandstone.	
· · · · · · · · · · · · · · · · · · ·		192	195	Sandstone.	Same sandstone as 183-189, also with a milky quartz fragment.	
		195	198	Sandstone	Approximately 40% sandstone as in 183-189 metres "clean" medium lower grain. Approximately 60% sandstone ("dirtier") fine grained, micaceous, carbonaceous, also trace calcite fragments and trace of carbonaceous fragments, also trace of red-brown sandstone fragments.	
		198	201	No Sample		

	D DEPTHS PH. LOGS	l I				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION ·	SAMPLE
		0	9	Casing	Into bedrock, siltstone and mudstone.	
		9	12 '	Mudstone	Dark grey inside pieces but powder is a medium light grey.	
		12	15	Mudstone	As above but slightly silty.	·····
		15	18	Mudstone .	Dark grey pieces, medium light grey powder, silty.	
		18.	21	Mudstone	Dark grey pleces with brownish grey powder, silty.	
		21	24	Mudstone	Dark grey, slightly silty, mostly powder, medium grey.	
		24	27	Mudstone	As above, more pieces (30%).	
		27	30	SIItstone	Dark grey, 30% medium dark grey, very fine grained (upper) sandstone, minor mudstone.	
		30	33	Mudstone	Dark grey pieces, medium grey-brown powder, pieces are very silty, 40% pieces, some slightly carbonaceous pieces.	
		33	36 ,	Siltstone ·	Dark grey pieces, greyish brown powder, 30% medium dark grey sandstone, fine grained (lower), 20% mudstone in medium light grey powder.	
		36	39	Siltstone/Sandstone	Siltstone is dark grey in pieces and powder, sandstone is dark grey to medium dark grey, up to fine (upper) grained, pieces and powder, minor mudstone in medium light gray powder.	
		39	42	Mudstone	Dark grey, larger pieces are silty, trace calcite on surfaces.	
		42	45	Mudstone	Dark grey pleces and brownish grey powder, very slight carbonaceous appearance, only the very slightest trace of calcite.	
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ORRECTED ROM GEOP		DR I LI DEF	_ers Pth			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		45	48	Siltstone	Brownish grey powder, 20% pieces of which most are a medium dark grey, lower fine grained sandstone, minor mudstone, trace carbonaceous pieces.	
		48	51	Mudstone	Dark grey pleces (20%) and brownish-grey powder, trace of tiny carbonaceous or coally pleces.	
		51	54	Mudstone	Dark grey in pieces, pale brown-grey powder, sample almost totally powder.	
		54	57	Siltstone	Brownish grey powder and minor small dark grey pieces, 20% dark grey, upper fine grained sandstone pieces, minor mudstone.	
		57	60	Sandstone	Medium dark grey, medium (lower) grained. some pieces have flat smooth surfaces indicating some type of fracturing, sample is slightly wet, sandstone is well indurated, trace calcite, mud ring formed in hole so losing most of the finer material at this point.	
		60	63	Sandstone	Dark grey, lower fine grained, slightly carbonaceous, minor fine material (silt).	
		63	66	Sandstone	2 types; 1) approximately 50% dark grey, carbonaceous, fine grained, dirty type sandstone, plus trace calcite 2) approximately 50% medium grey color, Upper fine grained, "cleaner" almost salt and pepper.	-
		66 .	.69	Sandstone	Same two types as 63-66; 1) 80% 2) 20% - with traces of calcite and carbonaceous fragments.	
		69	72	Mudstone	Dark grey, slightly silty, carbonaceous, with 5% upper fine grained sandstone fragments, trace calcite.	
		72	75	Sandstone	With approximately 10% coal fragments, sandstone is medium dark grey, very fine grained, carbonaceous, up to silt size grains, trace of fine grained fragments.	

CORRECTED FROM GEOF	DEPTHS	DR I LI Def		MAIN LITHOLOGY		
FROM	то	FROM	то		LITHOLOGIC DESCRIPTION	SAMPLE
		75	78	Sandstone	With approximately 5% coal fragments, sandstone is medium dark grey, very fine grained, carbonaceous, ranges to siltstone, trace calcite and quartz.	
		78	81	Mudstone	Medium dark grey, some slightly silty, slightly carbonaceous, trace carbonaceous fragments, calcite and fine grained sandstone fragments.	
		81	84	Sandstone	Very fine grained, medium grey, also approximately 30% mudstone as in 78-81, trace coaly carbonaceous fragments.	
		84	87	Siltstone	Medium dark grey, very muddy, most chips approximately millimetre size, otherwise nondescript.	
		87	90	Siltstone	Same as 84 to 87 metres.	
		90	93	Mudstone	Some slightly silty, medium dark grey, similar to 84-90.	
		93	96	Mudstone	Slightly carbonaceous, medium dark grey, trace of coaly carbonaceous fragments and sandstone.	
		96	99	Mudstone	Dark grey, carbonaceous, silty, resin on one piece, trace of medium grey, medium (lower) grained sandstone.	
		99	102	Mudstone	Dark grey, slightly carbonaceous and silty, trace calcite, trace fine sandstone.	
		102	105	Mudstone	As above.	
		105	108	Mudstone	As above, trace of vein calcite.	
		108	111	Mudstone	As above, but slightly more silty, trace pyrite?	
		111	114	Mudstone	Dark grey, slightly carbonaceous, trace calcite, mudstone slightly silty.	

CORRECTEL FROM GEOF		DRILI DEF	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		114	117	Mudstone	As per 111-114 m.	
		117	120	Mudstone	Dark grey, larger pieces are very slity, 2% calcite, slightly carbon- aceous.	
		120	123	Siltstone	Dark grey, slightly carbonaceous, minor coaly pieces, 30-40% mudstone, trace calcite.	
		123	126	Siltstone	Dark grey, very carbonaceous, 15% coaly pieces, minor mudstone, trace calcite, trace medium dark grey, very fine (upper) grained sandstone.	
		126	129	Mudstone	Dark grey, very carbonaceous, 20% coaly pieces, silty, trace calcite, carbonaceous surfaces showing slickensides, polished surfaces.	
		129	132	Mudstone	Dark grey, silty, carbonaceous, trace pyrite, trace calcite.	
		132	135	Mudstone	Dark grey, carbonaceous, trace calcite, trace pyrite, smoothed carbonaceous surfaces.	
		135	138	Mudstone	Dark grey, carbonaceous, silty in larger pieces, trace calcite, smoothed carbonaceous surfaces.	
		138	141	Siltstone	Dark grey, carbonaceous, 25% medium dark grey, lower fine grained sandstone, 25-30% mudstone/silty mudstone, trace of coaly bits, pyrite and calcite.	
		141	144	Mudstone	Dark grey, silty, carbonaceous, 10% coaly pieces; 2% calcite, trace pyrite, silckensides and polished surfaces on some pieces, fault?	
		144	147	Mudstone .	Dark grey, slightly carbonaceous, slity in larger pieces, trace calcite, trace coaly pieces.	
		147	150	SIItstone	Dark grey, minor mud, 1-2% calcite, some showing slickenside surfaces, pieces are generally larger so more well indurated than previous material.	

	D DEPTHS	DRILLERS DEPTH				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		150	153	Siltstone	Dark grey, very slightly carbonaceous, 30-40% mudstone, trace calcite, fairly well indurated.	
		153	156	Siltstone	As above but only 20-30% mudstone.	
		156	159	Siltstone	Dark grey, very slightly carbonaceous, trace calcite, minor very fine grained sandstone.	
		159	162	Siltstone	Medium dark grey, very slightly carbonaceous, trace coaly pieces, trace pyrite, calcite.	
		162	165	Mudstone	Mudstone isdark grey and carbonaceous, 40% coal and carbonaceous pieces, possible that more coal was present but has been washed away.	11
		165	168	Coal/Carbonaceous Mudstone	Coal and carbonaceous pieces, minor mudstone, trace pyrite, again possibly higher percent of coal, but because of water, has been washed away.	12
		168	171	Siltstone/Mudstone	Dark grey, carbonaceous, 30% coaly pieces, trace calcite, some carbonaceous pieces showing sheared surfaces, possible that most coal has been washed away.	13
		171	174	Mudstone	Some is slightly slity, carbonaceous with minor coaly fragments, medium dark grey, trace calcite and 1 cm sized fragments.	
		174	177	SIItstone	Up to very fine grained (lower) sandstone, medium dark grey, minor mudstone trace calcite fragments, trace carbonaceous fragments.	
		177	180	Siltstone	Medium grey, carbonaceous with many tiny carbonaceous fragments in chips, also minor coaly fragments, also trace calcite.	
		180	183	Mudstone	Slightly silty, medium dark grey, less than 5% coaly and carbonaceous fragments, trace of calcite with less than one centimetre sized fragments.	

	DEPTHS		LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		183	186	Siltstone/Mudstone	Much of sample is powdered, trace tiny carbonaceous fragments and calcite.	
		186	189	Siltstone	Up to very fine grained sandstone, medium dark grey, carbonaceous, minor coaly fragments and carbonaceous mudstone, trace calcite.	
		189	192	Mudstone	Medium dark grey, carbonaceous, rare coaly fragments, tiny traces of calcite.	
		192	195	Sandstone	Range from very fine grained to siltstone, medium dark grey, approximately 5% carbonaceous mudstone and carbonaceous fragments, trace of tiny calcite fragments.	-
,		195	201	Sandstone	Medium grey, upper fine grained, dirty salt and pepper appearance, carbonaceous, about 10% medium dark grey, carbonaceous siltstone, trace coaly carbonaceous fragments, trace tiny calcite fragments.	

	D DEPTHS PH. LOGS		DRILLERS DEPTH			
FROM	то	FROM	TO	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
·······					8 feet of casing, 5 1/2" hole	
		9	12	Mudstone .	Dark grey, slightly carbonaceous, some slitstone pieces (approximately 20-30%).	
		12	15	Mudstone	Dark grey, slightly silty, 20-30%, powder and larger pieces.	
<u> </u>		15	18	Siltstone	Medium grey, powder with larger pieces, slightly muddy.	
		18	21	Siltstone	Medlum dark grey, otherwise as per 15-18 interval.	
		21	24	Mudstone ,	Dark grey, very carbonaceous, 50/50 pleces/powder.	
		24	27	Mudstone/Coal	Mudstone is dark grey, carbonaceous, coal is sampled separately, approximately 1 meter thick (2 bags of sample)	4
		27	30	Mudstone/Coal	Dark grey carbonaceous mudstone with coaly stringers, coal 27-30 m with mudstone partings, coal sampled separately.	5
		30	33	Mudstone	Dark grey to black, carbonaceous, trace coaly stringers.	
		33	36	Mudstone/\$11tstone	Dark grey, carbonaceous, sample missed but cuttings looked at.	
		36	39	Coal Mudstone	Coal from 36-38 m, mudstone dark grey, carbonaceous with coaly stringers from 38-39 m.	6
•		39	42	Coal /Mudstone	Mudstone is dark grey to black and carbonaceous, minor coal.	7
<u> </u>		42	45	Mudstone	Dark grey; carbonaceous, slity pieces, minor coaly pieces.	
).		45	48	Sandstone	Medium dark grey, very fine (upper) grained, with minor carbonaceous pla fragments, minor siltstone/mudstone, trace calcite.	
	<u> </u>	<u> </u>		<u> </u>		

CORRECTED DEPTHS I FROM GEOPH. LOGS		DR I LI DEF				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		48	51	Coal /Mudstone	48-49 m coal, mudstone is black, very carbonaceous with coal stringers, mudstone pieces and powder, most coal was sampled separately.	8
		51	54	Mudstone	Dark grey to black, carbonaceous, some pieces are silty.	
		54	57	Siltstone	Dark grey, minor carbonaceous, trace calcite on surfaces.	
		57	60	Siltstone	Dark grey, slightly carbonaceous with coaly/carbonaceous plant fragments, trace pyrite.	
		60	63	Mudstone .	Dark grey, carbonaceous with coaly stringers and pieces, silty pieces present, trace calcite on surfaces.	
		63	66	SIItstone	Dark grey, slightly carbonaceous with minor carbonaceous and coaly pieces, minor mudstone.	
		66	69	SIItstone	Dark grey, very slightly carbonaceous, minor mudstone.	
	,	69	72	Siltstone	Dark grey, very slightly carbonaceous, 30-40% medium dark grey, fine grained (upper) sandstone, minor carbonaceous mudstone, very slight trace of calcite.	
		72	75	Sandstone	Medium dark grey, lower fine grained, slightly carbonaceous, with few carbonaceous pieces, trace pyrite, minor siltstone.	
		75	78	Mudstone	Dark grey, minor carbonaceous mudstone, no trace of sandstone.	
		78	81	Siltstone	Dark grey, minor carbonaceous mudstone, trace of very fine grained (upper), medium dark grey sandstone, trace of calcite.	
		81	84	Siltstone	Dark grey, trace carbonaceous pieces, trace calcite, trace medium grey, very fine grained (upper) sandstone.	

	D DEPTHS PH. LOGS	DR I LI DES	ERS PTH		LITHOLOGIC DESCRIPTION Dark grey, very minor carbonaceous pieces, approximately 30% mudstone, 2% calcite pieces, trace coal pieces.	
FROM	то	FROM	ŢO	MAIN LITHOLOGY		SAMPLE
		84	87	Siltstone		
		87	90	SIItstone/Mudstone	Dark grey, minor carbonaceous plant fragments and carbonaceous pieces, trace calcite.	
		90	93	Mudstone	Dark grey, carbonaceous with trace of plant fragments, minor siltstone, 25% coal pieces (.3 m seam)	
		93	96	Mudstone	Dark grey, silty pieces, minor mudstone, trace coaly pieces, trace calcite, trace carbonaceous pieces.	
		96	99	Siltstone	Dark grey, minor carbonaceous pieces, 30-40% medium grey, upper fine grained sandstone, minor mudstone, trace calcite.	
		99	102	Mudstone	Some silty, medium dark grey, trace of tiny coaly and carbonaceous fragments, trace calcite, 40% very fine grained sandstone.	
		102	105	Sandstone	Very fine grained, medium dark grey, hard to break, approximately 10% medium grey, lower fine grained sait and pepper type, trace carbonaceous fragments, very minor calcite veined chips.	
· 		105	108	Mudstone	Medium dark grey, silty, slightly carbonaceous, also approximately 30%, very fine grained sandstone/siltstone, trace calcite.	
		108	111	Sandstone	Medium dark grey, very fine grained, "dirty" sandstone, approximately 10% mudstone, trace carbonaceous fragments, more (but still much less than 5%) calcite fragments.	
		111	114	Sandstone	Same as 108 to 111 with approximately 10% mudstone, trace calcite.	

	D DEPTHS PH. LOGS	DR I LI	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		114	117	Sandstone	Very fine grained, medium dark grey, very thin calcite stringers and brown joint surface discoloration, trace carbonaceous material, 5% calcite fragments.	
		117	120	Sandstone	Very fine grained (lower), medium dark grey, trace coaly carbonaceous fragments, trace calcite.	
, , , , , , , , , , , , , , , , , , ,		120	123	Sandstone	Very fine grained to lower fine grained, medium dark grey, slightly micaceous, trace of coaly and carbonaceous fragments, trace calcite.	
		123	126	Sandstone	Same as 120 to 123 metres.	
		126	129	Sandstone	Upper very fine grained to lower fine grained, medium dark grey, rare lower medium grained "clean" sandstone fragments, trace bright coaly fragments, 5 to 10% calcite, trace quartz fragments.	
		129	132	Sandstone	Upper very fine grained to lower fine grained, medium dark grey with some dark carbonaceous laminations, fractured and calcite lined, 5 to 10% calcite, trace carbonaceous flecks.	
		132	135	Sandstone	Very fine grained, medium to medium dark grey, laminated and cross- laminated, approximately 30% cleaner fine grained sandstone, trace brown "concretion fragments?" trace of coaly fragments, less than 5% calcite, trace of quartz.	
		135	138	Sandstone	Very fine grained, medium dark grey, minor fine grained sandstone and siltstone, trace calcite and carbonaceous fragments.	
		138	141	Mudstone	Carbonaceous, medium dark grey, some silty, minor very fine grained sandstone, trace calcite.	
		141	144	Mudstone/Coal	Carbonaceous, dark grey mudstone, approximately 35% coal - dull and . bright, 1/2 to 2 millimetre fragments, trace calcite.	9

	DEPTHS PH. LOGS	DR I LI DEF	LERS PTH			
FROM	ТО	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
•		144	147	Mudstone/Coal	Carbonaceous, dark grey mudstone, approximately 35% coal - dull and bright, 1/2 to 2 millimetre fragments, trace calcite.	10
		147	150	Sandstone	Very fine grained, medium grey, minor carbonaceous mudstone, very minor fine grained sandstone, trace carbonaceous fragments and calcite.	
		150	153	Sandstone	(Upper) very fine grained, medium grey, slightly carbonaceous, trace calcite and carbonaceous fragments.	
,		153	156	Sandstone	Fine to medium (upper) grained, most is medium (upper), occasional (lower) coarse grains, "clean" type sand, salt and pepper, approximately 30/70 - quartz to dark minerals, very minor mudstone and carbon-aceous material, slight trace of calcite.	
		156	159	Sandstone	As above: fine to medium (upper) grained, most is fine, occasional lower coarse grained, minor mudstone and siltstone, mudstone with calcite veining, slickensides, rare carbonaceous plant fragments.	
-·· -		159	162	Siltstone	Medium grey, rare slickensides and calcite veining.	
		162	165	Siltstone	Medium grey, 30% mudstone, mudstone has plant fragments and minor calcite veining, slickensides are quite noticeable. Hole is producing a lot of water now.	
-		165	168	Siltstone	Medium grey, sandstone 30%, mudstone 20% with carbonaceous mudstone and plant fragments, slickensides, abundant calcite veining in sandstone and mudstones.	
		168	171	Sandstone	Dark, carbonaceous sandstone, very abundant calcite veining, fine grained, slickensides — noticeably carbonaceous.	
					Possible Fault	

CORRECTED FROM GEOD	1	DR I LL DEF				
FROM	то	FROM	ТО	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	1.4	Mudstone		
		1.4	3,36	Coal .	With minor carbonaceous mudstone, coal is powdered, mudstone is dark grey.	53
		3,36	4.0	Mudstone	Very carbonaceous with numerous coal stringers, up to 20% coal fragments	54
		4.0	6.0	Coal	With minor micaceous sandstone chips and carbonaceous mudstone, sandstone is very fine (lower) grained to silt size.	55
		6,0	7,3	Coal	Minor mudstone and siltstone pieces, medium grey	56
		7,3	8.5	Coal	Powder with minor places, very minor siltstone/mudstone pieces	57
	·	8.5	12.0	Mudstone	Medium grey to medium dark grey, minor carbonaceous plant fragments and trace coaly pieces	
-		12.0	15.0	Mudstone	As above, but no carbonaceous plant fragments seen	
		15.0	18.0	Mudstone	Medium dark grey to dark grey, some pieces are silty, slightly carbonaceous, trace calcite veins	
		18.0	21.0	Mudstone	Dark grey, slightly carbonaceous	
		21.0	24.0	Mudstone	As above, also silty pieces	
		24.0	27.0	Mudstone	Dark grey to medium dark grey, silty pieces, 2% calcite	
``					END OF HOLE	

FALLING CREEK PROJECT - CHIP LOG

	DEPTHS PH. LOGS	DR I L L DEF				
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	4.5	•		
		4.5	15.0	Coal	With small mudstone/siltstone partings. Sample on 2 m intervals and one 0.5m interval at bottom	58 - 63
		15.0	17.0	Mudstone	Brownish grey powder with minor dark grey pieces, trace carbonaceous pieces	
		17.0	20.0	Siltstone	Dark grey, minor carbonaceous pieces, 30-40% mudstone powder, brownish grey, trace very fine (upper) grained, medium dark grey sandstone pieces	
		20.0	23.0	Siltstone	As above, more sandstone pieces.	
		23.0	26.0	Siltstone	Brownish grey to dark grey, sandy pieces, trace calcite	_
		26.0	29.0	Sandstone	Brownish grey, up to coarse (upper) in grain size, slightly Fe stained, 5% calcite in pieces and surfaces. Minor coaly carbonaceous pieces, fractured and weathered, minor slitstone powder	
		29,0	32.0	Siltstone	Dark grey, trace calcite and coaly pieces, minor sandstone pieces as above (possibly from above interval)	
		32.0	35.0	Mudstone	Dark grey, silty, slightly carbonaceous, trace calcite	
		35.0	38.0	Coal	40-50% mudstone pieces, sample is fairly dry because of mud ring in hole	64
		38.0	41.0	Coal	Sample is saturated, appears to be minor pieces; probably mudstone.	65
		41.0	44.0	Siltstone	Dark grey, carbonaceous, trace coaly pieces, trace calcite, minor very fine (upper) grained sandstone	
		44.0	47.0	Siltstone	Dark grey, carbonaceous plant fragments, trace calcite, minor mudstone	
		47.0	50.0	Sandstone	Medium grey, very fine (upper) grained, trace calcite, trace carbonaceous material, minor sittstone.	
					END OF HOLE Static water level of 17 m	

K11.71(40)

вох	LENGTH OF	DRILL DEF	1	CORRECTE FROM				
NUMBER	INTERVAL	FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
	in cm	in me	rers				LSD Top of coal is approximately 2.9 m from log pick	,
1	20.0	0.0	.20			Mudstone	Medium dark grey with brownish grey tinge, soft, broken in large pieces	
1	15.0	.20	•35			Mudstone	Carbonaceous mudstone, medium dark grey, broken and powdered	
2	17.0	•35	•52	2•9		Coal	Dull banded, some is very hard, weathered/oxidized (top 7 cm coal at base of Box 1)	1
2	2.0	-52	•54			Coal .	Cannel/boney coal, hard	1
2	6.0	.54	.60	T20.1	CORE	Mudstone	Carbonaceous, dark grey	1
2	5.0	.60	.65	1031	CORE	Coal	Dull coal	1
2	15.0	.65	.80			Coal	Dull banded, hard, 20° dip angle between coal and tuff	1
2	3.0	.80	.83	4.49	4.52	Tuff band	Light grey brown, micaceous, oxidized	1
2	22.0	.83	1.05	4.52 (53 cm	5.29 lost coal)	Coal .	Dull banded, hard, 20° dip at top of coal, 10° dip at base	1
2	6.0	1.05	1.11	5.29	5.35	Tuff band	Light brown-grey, micaceous with coaly fragments throughout, oxidized, hard, not exactly below coal	2
2	9.0	1.11	1.20	LOST	CORE	Coal	Dull banded with mudstone stringers, very hard, crispy and good cleat - broken	2
2	10.0	1.20	1.30			Mudstone	Coaly, very hard (almost hard dirty coal)	2 .
2	6.0	1.30	1.36	•		Mudstone	Carbonaceous mudstone with bright coaly stringers	. 2
2	13.0	1.36	1.49			Tuff band	Light grey-brown, micaceous, oxidized, coaly plant fragments throughout, 12° dip	2
K11.71(1	5)					•		

вох	LENGTH OF	DR1L1 DEF		CORRECTE FROM				
NUMBER	INTERVAL	FROM	то	FŖOM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
2	in cm 8.5	In me 1.49	ters 1.57	LOST	CORE	Coa!	Bright banded, hard, occasional dull fusain (charcoal-like) pieces, coalless oxidized	2
2	5.0	1.57	1.62			Tuff band	Light brown-grey, rootlets, micaceous, oxidized, hard	2
2	4.0	1.62	1.66			Mudstone	Carbonaceous mudstone	2
2	16.0	1.66	1.82			Coal	Powdered, broken, dull banded with up to 1 cm thick mudstone bands	2
2	13.0	1.82	1.95			Mudstone	Carbonaceous mudstone, possible clay layers	2
3	8.0	1.95	2.03			Mudstone	Coaly, dark grey, hard, broken - small grains of carbonaceous matter, grains tuff like	3
3	7.0	2.03	2.10			Tuff band	Medium brown grey, micaceous, soft, coaly fragments within	3
3	42.0	2.10	2.52	7.06 7 cm	7,55 lost coal	Coal	Dull banded, sheared throughout, weathered - not crisp, very sheared, powdered and dirty at base	3
3	6.0	2.52	2.58			Mudstone	Dark grey, sheared, minor carbonaceous fragments	3
3	5•0	2.58	2.63	LOST	CORE	Coal	Dull banded, soft	3
3	2.5	2.63	2.66		i	Mudstone	Dark grey	3
3	3.0	2.66	2.69	7.74	7.77	Tuff band	Medium dark brown coal stringers, muddy at base	3
3	23.0	2.69	2.92	7.77	8.00	Mudstone	Dark grey with coal stringers and micaceous tuff like lenses (mm scale bands), sheared and slickensided 5-10° dip	3
3	20.0	2.92	. 3.12	8.00	8.22	Coal	Duil banded, very sheared, crumbly	3

K11.71(16)

вох	LENGTH OF	DRILL DEF			ED DEPTH LOGS			
NUMBER	INTERVAL	FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
3	in cm 12.0	in me 3.12	ters 3.24	8,22	8.30	Tuff	Micaceous, medium light grey-brown with coal stringers, dirty at top and bottom, 5% dip	3 .
4	. 3.0	3.24	3.27			Mudstone	Tuffaceous and coaly throughout, dark grey, oxidized with fe staining	4
4	135.0	3.27	4,62	(15 cm 8.63	Lost Coal)	Coal	Oxidized, duli banded, duli lustrous, weathered, sheared and slicken- sided, fractured, breaks very easily, fusain bands, duli lustrous is harder to break at 74-79 cm - cannel-coal-stoney, streaks brown in places, very hard, carbonaceous plant fragments, slickensides	, 4
5	20.0	4.62	4.82	9,98	10.18	Coal	Dull banded, powdered at top, somes pieces but mostly crumbly-sheared	4
5	30.0	4.82	5,12	10.18	10.48	Coal	Oxidized, dirty (dark brown streak in places), very sheared, dull banded - bright on shear planes - heavier from mudstone clasts	4
5	4.0	5.12	5.16			Mudstone	Dark grey, coaly	_
5	90.0	5.16	6.06			Mudstone	Medium dark grey-brown, with coaly stringers and fragments, slicked along coals, upper part rich in plant fragments, slity at base	
6	90.0	6.06	6.96	-		Siltstone	As above, mudstone becomes very silty, less carbonaceous, becomes sandy at base	
6	23.0	6.96	7.19			Sandstone	Very fine grained (lower), medium dark brownish-grey, very slightly carbonaceous fracture with Fe-staining	
End of Core							no bedding planes in mudstone observed (i.e., no BCA's available)	
							TD = 11 m	

K11.71(17)

CORRECTED DEPTHS FROM GEOPH. LOGS		DRILLERS DEPTH			,	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
-		0	6	Casing	Overburden	
		6	9	Mudstone	Dark grey pieces with light grey-brown powder. Trace carbonaceous plant fragments in pieces.	
12.9	18.2	9	12	Coal	with 25% carbonaceous mudstone pieces and powder. Two bulk sample bags.	66
With Partings		12	15	Coal	with approximtely 40-50% carbonaceous mudstone. Most coal sampled separately from mudstone. Coal bulk sample - two bags.	67
		15	18	Mudstone	Dark grey, black, carbonaceous, very minor siltstone. Trace coaly pieces.	
,		18	21	Mudstone	As per 15-18 interval.	
		21	24	Mudstone	Dark grey to black with coaly stringers, carbonaceous, 2% coaly pleces.	,
		24	27	Siltstone	Medium dark grey, minor pieces carbonaceous. Trace coaly pieces. Minor mudstone.	
		27	30	Sandstone	Medium grey, coarse lower grain size. Trace carbonaceous/coaly pieces. Very minor siltstone.	
		30	33	Sandstone	As per 27-30 m Interval except trace of minor calcite.	
		33	36	Sandstone	Medium grey, coarse lower grain size, 30-40% siltstone/mudstone pieces and powder, some of which is carbonaceous. 4% coaly pieces. Trace calcite.	
		36	39	Sandstone	Medium grey, very fine grained (approximately 10% fine grained).	
		39	42	Sandstone	Medium dark grey, very fine grained (approximately 5% fine grained), occasional large (cm) bright coal fragments, trace calcite.	

CORRECTED FROM GEOR		ĐR I LI DEF	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		42	45	Sandstone	Medium dark grey, very fine grained to upper very fine grained, rare fine grained and lower medium grained, approximately 5% mudstone, more but still trace calcite.	
		45	48	Sandstone	Medium dark grey, very fine grained upper (rarely greater), approximate- ly 10% bright coal fragments, approximately 10% carbonaceous mudstone.	
52.4 53.6	52.8 54.2	48	51	Coal/Mudstone	Approximately 40% tiny bright coal fragments, approximately 30% dark mudstone fragments. 30% very fine grained upper sandstone.	68
		51	54	Siltstone	Medium dark grey, minor carbonaceous mudstone, trace carbonaceous fragments.	
		54	57	Siltstone	Silty mudstone to very fine grained sandstone, mostly siltstone, less than 5% coal fragments.	
		57	60	S11tstone/Mudstone	Approximately 1:1, medium grey siltstone: dark grey carbonaceous mudstone, traces carbonaceous fragments, less than 5% "clean" fine grained sandstone fragments.	
		60	63	Siltstone/Sandstone	Approximately 1:1, very fine grained sandstone, medium grey: siltstone, medium grey, much less than 5% carbonaceous fragments with occasional 2 mm coaly pieces.	
		63	66	Sandstone	Fine grained lower, some very fine grained, medium grey, carbonaceous sandstone, otherwise rather "clean" type less than 5%, duli coal pieces (rare).	
		66	69	Sandstone	As 63-66 with one large 1 x 1.5 cm dull coal piece and trace tiny fragments, trace of quartz crystal fragments.	
		69	72	Sandstöne	Very fine grained to lower fine grained, medium grey, approximately 30% carbonaceous mudstone, trace coaly carbonaceous fragments.	

FROM GEOPH. LOGS			LERS PTH			
FROM	TO	FROM	т0	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		72	75	Sandstone	Very fine grained to lower fine grained, medium grey, minor upper fine grained, relatively "cleaner" sandstone, slightly carbonaceous sandstone.	
		75	78	Siltstone	Medium dark grey, minor mudstone and very fine grained sandstone. Trace coaly carbonaceous fragments, with one cm sized coal fragment.	
		78	81	SIItstone/Sandstone	Tiny fine grained lower sandstone, mostly very fine grained, medium dark grey, minor mudstone, tiny trace of carbonaceous fragments.	
		81	84	Mudstone	Approximately 60% dark grey carbonaceous mudstone, approximately 35% medium dark grey siltstone, trace of calcite, approximately 5% bright coal fragments.	
		84	87	Mudstone/Sandstone	Approximately 50% dark grey carbonaceous mudstone, approximately 50% siltstone to lower fine grained sandstone, medium grey, "clean" salt & pepper approximately 50/50, much less than 5% carbonaceous fragments, approximately 10% coal fragments.	
		87	90	Sandstone	Very fine grained, medium dark grey "dirty" type, minor mudstone and sandstone to lower fine "clean" medium light grey.	
		90	93	Siltstone	Medium dark grey, minor carbonaceous mudstone, very fine grained and fine grained sandstone as above, and approximately 10% duil and bright coal fragments less than cm size.	
		93	96	Siltstone	Medium dark grey, minor carbonaceous mudstone, minor very fine grained sandstone, trace calcite and coaly carbonaceous fragments.	
· · · · · · · · · · · · · · · · · · ·		96	99	Mudstone	Dark grey carbonaceous mudstone, slightly silty, minor siltstone, very fine grained sandstone, less than 5% bright coal fragments.	coal seam washed awa
		99	102	Mudstone .	Some carbonaceous, some silty, some sheared, trace calcite and carbonaceous fragments.	

FALLING CREEK PROJECT - CHIP LOG

•	D DEPTHS	DR I LI	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		102	105	Mudstone	Dark grey carbonaceous, some silty, some sheared, trace bright coaly fragments (much less than 5%) trace of fine grained sandstone.	
-		105	108	Sandstone	Very fine grained and siltstone medium dark grey, slickensides and minor calcite, occasional dull banded coal and minor bright fragments.	
		108	111	Mudstone .	Dark grey carbonaceous minor very fine grained sandstone, shearing slickensides, trace calcite and pyrite, coaly fragments.	
		111	114	Mudstone	Medium dark grey, silty, not carbonaceous, tiny trace calcite.	
		114	117	Mudstone	Medium dark grey, silty, minor siltstone to very fine grained (upper) sandstone, trace bright carbonaceous fragments, more calcite, but still much less than 5%.	
		117	120	Sandstone .	Very fine grained (upper and lower), medium dark grey, dirty type, still much less than 5% calcite fragments and veins, trace bright coal fragments.	
		120	123	Siltstone	Medium grey, mudstone 20% medium dark grey.	
		123	126	Mudstone	Dark grey, minor carbonaceous mudstone, slickensides. Less than 20% siltstone.	
		126	129	Mudstone	Dark grey, 30% carbonaceous mudstone, slickensides, trace siltstone.	coal seam washed away
	1	129	132	Mudstone	Dark grey, 20% carbonaceous mudstone, slickensides, minor siltstone.	
					Producing a lot of water, changed bits approximately 129 m	
		132	135	Siltstone	Medium grey, minor mudstone, some carbonaceous mudstone, slickensides, minor sandstone, light grey, very fine grained.	,
		135	138	Siltstone	Medium grey, lighter grey sandstone, very fine grained, approximately 30%, 40% mudstone, slickensides.	
i				_		

CORRECTED FROM GEOR		DR I L DEI	LERS PTH			,
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
	•	138	141 .	Siltstone	Medium grey, 20% lighter grey sandstone, very fine grained, 40% mudstone, slickensides.	
		141	144	Mudstone	Dark grey (larger pieces of samples) with carbonaceous mudstone, trace coal, minor siltstones, sandstone mainly as small pieces, i.e., smaller size pieces of samples.	
		144	147	Siltstone	Medium dark grey, approximately 30% mudstone with carbonaceous mudstone, trace very fine grained sandstone.	
		147	150	Siltstone	Medium dark grey, approximately 30% mudstone with carbonaceous mudstone, trace very fine grained sandstone.	
		150	153	Mudstone	Dark grey carbonaceous mudstone, trace of coal approximately 10%, minor siltstone, medium grey, approximately 15%.	,
		153	156	Siltstone	Medium grey, minor mudstone, trace carbonaceous mudstone.	
		156	159	Mudstone	Dark grey, no carbonaceous mudstone, 20% siltstone, trace sandstone	
		159	162	Mudstone	Dark grey, trace siltstone, trace carbonaceous mudstone.	
	,	162	165	Siltstone	Medium dark grey, 30% sandstone, very fine grained upper, minor approximately 15% mudstone, trace coal probably from up hole.	
		165	168	Siltstone	Minor mudstone, trace sandstone as sand grains, medium dark grey.	
		168	171	Sandstone	Mainly as powder, sand grains, generally fine grained, ranging from very fine grained to medium, quartz - 60%, rock fragments - 20-30%, chert less than 10%, sample contains trace mudstone fragments, coal fragments, a few grains calcite.	

	D DEPTHS PH. LOGS	DR1L DE	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		171	174	Sandstone	Salt and pepper sandstone as above, but with a few grains of pyrite, some pieces of sandstone are fine grained and light grey, quartz cement?	
		174 -	177 .	Sandstone	Typical salt and pepper sand, some fragments as well as grains are very fine grained, 60% quartz to 40% rock fragments and chert, catcite grains, mudstone fragments are possible contamination because hole is producing so much water.	
		177	180	Sandstone	As above, salt and pepper, medium grained, average size is fine, coal and mudstone fragments (probably from uphole) quartz and chert dominant, rock fragments abundant.	
		180	183	Sandstone	Dominant lithology is sandstone, dark grey, very fine lower to upper. These are present as small fragments. At least 20% of sample however consists of Individual grains up to coarse upper in size, of quartz and numerous angular fragments of chert. Mostly light grey, rare coal and carbonaceous mudstone, occasional fragments of sandstone, medium dark grey, medium (Lower) grained.	
		183	186	Sandstone	As above with more abundant medium and coarse lower sized quartz grains, more abundant coal fragments (not powdered - this would be lost) looks hard, duil, lustrous, brittle coal in rectangular fragments. About 10% of sample is purely sand grains from very fine to medium (Upper) grained.	
,		186	189	Sandstone	60% of sample is sand grains and siliceous fragments. Most of remainder is dark grey to medium dark grey, very fine upper sandstone. Also present is rare coal as above and fragments of pale grey chert.	
		189	192	Sandstone	50-60% of sample is lithic fragments of dark grey very fine grained (lower) sandstone and siltstone, 30% is medium lower to medium upper, sandstone is medium dark grey as fragments of individual sand grains, also present are few large carbonaceous mudstone fragments and minor coal. Some of coarser sandstone is pale grey. Generally, more lithic fragments than above.	

HOLE NO. 82-12

CORRECTED FROM GEOPH		DR I LI DEF	LERS PTH		·	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION .	SAMPLE
		192	195	Sandstone/Siltstone	Medium dark grey to dark grey rare coal chips.	
		195	198	Sandstone	Medium dark grey to dark grey, very fine lower to very fine upper with some siltstone and carbonaceous mudtone which shows polished surfaces (complete absence of quartz grains). One fragment which looks totally out of place is sait and pepper sandstone, medium upper but it is oxidized (Fe staining) so it can be a drill chip.	
		198	201	Siltstone	Grading to silty mudstone, dark grey, numerous coal fragments mostly brittle rectangular and bright with concoldal fracture.	
					END OF HOLE LOGGER'S DEPTH = 198 M	

CHIP SAMPLE LOG AUGUST 21, 1982 FALLING CREEK PROJECT

CORRECTED FROM GEOF		DR I L! DEF	ERS '			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		0	24.24	Sandstone/Mudstone	Casing to 80 feet (24.24 m) very fine grained carbonaceous sandstone and carbonaceous mudstone fragments - very little coal if any at all	
		25	30	Sandstone	Fine grained to upper fine, medium grey, mostly relatively "clean" sandstone but not true salt and pepper, a lot of mud in sample	
31,92 33,04	30	33	Sandstone .	Fine to medium grained, medium grey color, sometimes salt and pepper type, sometimes fine grained and dirty, occasional rounded pebbles and pebble places to approximately cm size, some are very fine sandstone pebbles, other are probably chert (green) and/or quartzite, also few milky quartz fragments, muddy sample	coal seam not recover ed	
		33	36	Sandstone	Very fine grained to coarse upper grained, bulk is upper fine to lower medium, all but very fine is relatively "clean" sandstone with variable quartz to dark mineral ratios creating color shades from light grey to medium dark grey, rare upper coarse grain size, also a few fragments that look like broken pebble fragments, sample was very muddy prior to wash	
		36	39	Sandstone	Very fine grained to very minor lower coarse with at least one upper coarse grain, colors vary about medium grey, the larger grain sizes are somewhat "cleaner", mm to cm size fragments, one 1 x 3 cm upper fine grain piece, hairline quartz-filled fractures, trace of tiny calcite fragments, no carbonaceous fragments apparent	
		39	42	Sandstone	Very fine and lower fine grained, medium dark grey, less than 20% fine grained, approximately 5% broken white and creamy crystalline fragments, most are likely quartz, also trace shaving of metallic yellowish material (probably pyrite), numerous fracture surfaces (calcite coated).	
		42	45	Sandstone	Very fine grained, upper mostly, medium dark grey color, trace tiny calcite fragments, very minor (2 or 3 pieces) of medium grey, lower coarse grained sandstone, rounded and well sorted, predominantly dark grains, cement matrix	

CHIP SAMPLE LOG AUGUST 21, 1982 FALLING CREEK PROJECT

	D DEPTHS PH. LOGS	DR I LI DEF				
FROM	то	FROM	то		LITHOLOGIC DESCRIPTION	SAMPLE
		45	48	Sandstone	Very fine to lower coarse, most are medium grained, color shades medium dark grey to light grey, most of pieces are medium gray, white quartz to dark mineral ratio approximately 80/20 in upper grain sizes, much less in bulk of sample, no trace of carbonaceous fragments yet, samples very muddy before washing, mm to cm size fragments	
		48	51	Siltstone .	Dark grey, 20% medium dark grey, fine upper sandstone pieces, matrix supported, largest clasts being dark chert, approximately 30% mudstone pieces, silty, dark grey	
		51	54	Siltstone	Dark grey, trace calcite on surfaces, minor very fine lower to very fine upper sandstone	
		54	57	Sandstone	Approximately 30% fine upper to coarse lower pieces, medium grey, light to dark grains ratio 40/60, the rest of the sandstone (approximately 40% is fine lower dark grey pieces, 30% dark grey siltstone pieces, trace quartzite veins (1 mm)	
		57	60	Sandstone	Medium grey to medium light grey color, coarse lower, average size of pieces being 3 - 4 mm the largest being 1 cm. Trace quartz grains 2 - 3 mm in size. 15% siltstone/mudstone some pieces being slightly carbonaceous	
		60	63	Sandstone	35% medium light grey, coarse upper sandstone, matrix supported but only just, light/dark clasts ratio 30/70, 50% medium dark to dark grey very fine grained sandstone, approximately 20% siltstone. Trace quartz pieces and grains, siltstone trace carbonaceous	
*		63	66	Sandstone	35% medium grey, coarse upper sandstone, quartz/chert (dark) ratio 50/50 40% dark grey very fine grained sandstone. Minor siltstone, one piece being carbonaceous with a 1 mm wide coaly stringer. Trace quartz veining (1 - 2 mm scale)	

CHIP SAMPLE LOG AUGUST 21, 1982 FALLING CREEK PROJECT

CORRECTED FROM GEOR	1	DRILI DE	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		66	69	SIItstone	Dark grey, minor pieces carbonaceous with coaly stringer, 30~40% medium light grey coarse lower sandstone, very minor very fine grained dark grey sandstone, trace quartz grains	
		69	72	Siltstone .	Dark grey, carbonaceous with very minor coally stringers, approximately 20-30% medium dark grey fine lower sandstone, not carbonaceous, minor mudstone, trace calcite surfaces	
		72	75	Siltstone	As above except only minor signs of carbonaceous material	
76.16	76.31	75	78	Siltstone	Dark grey, slightly carbonaceous with trace coaly pieces, 10-15% fine grained medium dark grey sandstone pieces, approximately 25% mudstone, dark grey, silty	coal stringer
77.06	78.48	78	81	SIItstone	Dark grey, slightly carbonaceous, 5% coaly pieces, approximately 30% dar grey fine grained sandstone pieces, trace coaly stringers	coal seam not recovered
		81	84	SIItstone	Dark grey, 20% carbonaceous pieces, trace coaly stringers, minor dark grey, very fine grained sandstone, minor mudstone	
		84	87	Siltstone	Dark grey, some pieces slightly carbonaceous, trace coaly pieces, approximately 20% medium dark grey fine lower sandstone, some pieces have faint laminations. Trace calcite on surfaces	
87.86	88.96	87	90	Siltstone	Dark grey, some pieces slightly carbonaceous, 5% coaly pieces, trace of medium dary grey fine upper sandstone pieces	coal seam not recovered
		90	93	Sandstone	Approximately 80% medium dark grey, very fine upper sandstone pieces. 5-10% medium grey to medium dark grey, coarse lower to coarse upper sandstone pieces. 10-15% siltstone pieces, some of which are slightly carbonaceous, trace calcite	

CHIP SAMPCE LOG AUGUST 21, 1982 FALLING CREEK PROJECT

	DEPTHS	DRIL DE	LERS PTH		•	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		93	96	Siltstone	Dark grey, very small pieces, approximately 20% fine grained dark grey sandstone, trace coaly pieces, trace quartz grains, approximately 30% dark grey mudstone	
	,	96	99	Sandstone	Dark grey, very fine lower to very fine upper, 20% siltstone pieces; minor siltstone, carbonaceous, trace quartz grains, trace fine upper sandstone pieces	,
		99	102	Sandstone	Medium grey to medium dark grey, fine grained, minor slitstone dark grey slightly carbonaceous, trace calcite	
		102	105	Sandstone	Medium dark grey, up to fine (upper) grained, some pieces carbonaceous, trace quartz pieces, most of sample is individual grains, minor silt-stone	
		105	108	Sandstone	Dark grey, very fine lower to very fine upper grain size, approximately 30% siltstone, 2% quartz grains, trace carbonaceous pieces, 2-4% medium grey, fine upper grained sandstone	
		108	111	Siltstone	Dark grey, very slightly carbonaceous, 15-20% medium dark grey sandstone up to coarse lower grain size, 60% dark chert grains, 35% quartz, approximately 5% matrix?, 20% mudstone, trace quartz grains	
		111	114	Siltstone	Dark grey, carbonaceous, 40% dark grey carbonaceous mudstone, trace calcite veining on surfaces and as 2 mm size pieces, trace coaly pieces	
		114	117	Mudstone	Dark grey to black, very carbonaceous with hair-thin coaly stringers, silty, minor siltstone, trace of calcite on surfaces and as small pleces, minor very fine grained (lower) sandstone pieces	
		117	120	Siltstone	Dark grey, carbonaceous, muddy, minor coaly stringers (hair size), 5-8% carbonaceous/coaly pieces, minor medium grey very fine grained sandstone grains, trace quartz/calcite grains	

CORRECTED FROM GEOR		1	LERS PTH	·	•	
FROM	то	FROM	то	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
119.51 coal zone	126.0	120	123	Siltstone	Dark grey, minor carbonaceous pieces, muddy, minor silty mudstone, 25% sandstone, medium grey to medium dark grey, grain size to fine upper, trace coaly pieces	coal seam not recovered
		123	126	Siltstone	Dark grey, slightly carbonaceous, muddy, 5% dark grey fine lower sandstone pieces, minor mudstone, 2-4% carbonacous/coaly pieces with hairlike coaly stringers present	
		126	129	Siltstone	Dark grey, carbonaceous, minor very fine sandstone and very minor "clean" sandstone of medium grain size, trace calcite	,
		129	132	Sandstone	Very fine to trace medium grained, dark grey to medium grey, most is medium dark grey, some carbonaceous plant fragments, approximately 30% dark silty carbonaceous mudstone, trace of carbonaceous fragments, approximately 5% (remnant woody material) now spherical - oolitic-like masses in vague cellular or similarly aligned structures - don't appear to be depositional but post depositional grains (i.e., like hemalitic-oolite like masses found as tree trunks and roots in outcrop)	
		132	135	Sandstone	Fine grained to medium (approximately 50/50), larger grain sizes cleaner but predominantly dark minerals (approximately 70/30), minor (approximately 10%) mudstone, sandstone is carbonaceous, trace carbonaceous fragments and white quartz fragments, trace calcite covered surfaces	
		135	138	Mudstone	Dark grey carbonaceous mudstone, minor slitstone to fine grained sand- stone, upper grain sizes are mostly "cleaner" but some very carbonaceous and laminated, approximately 15% coal fragments, duli and bright pieces all approximately 1 mm size.	

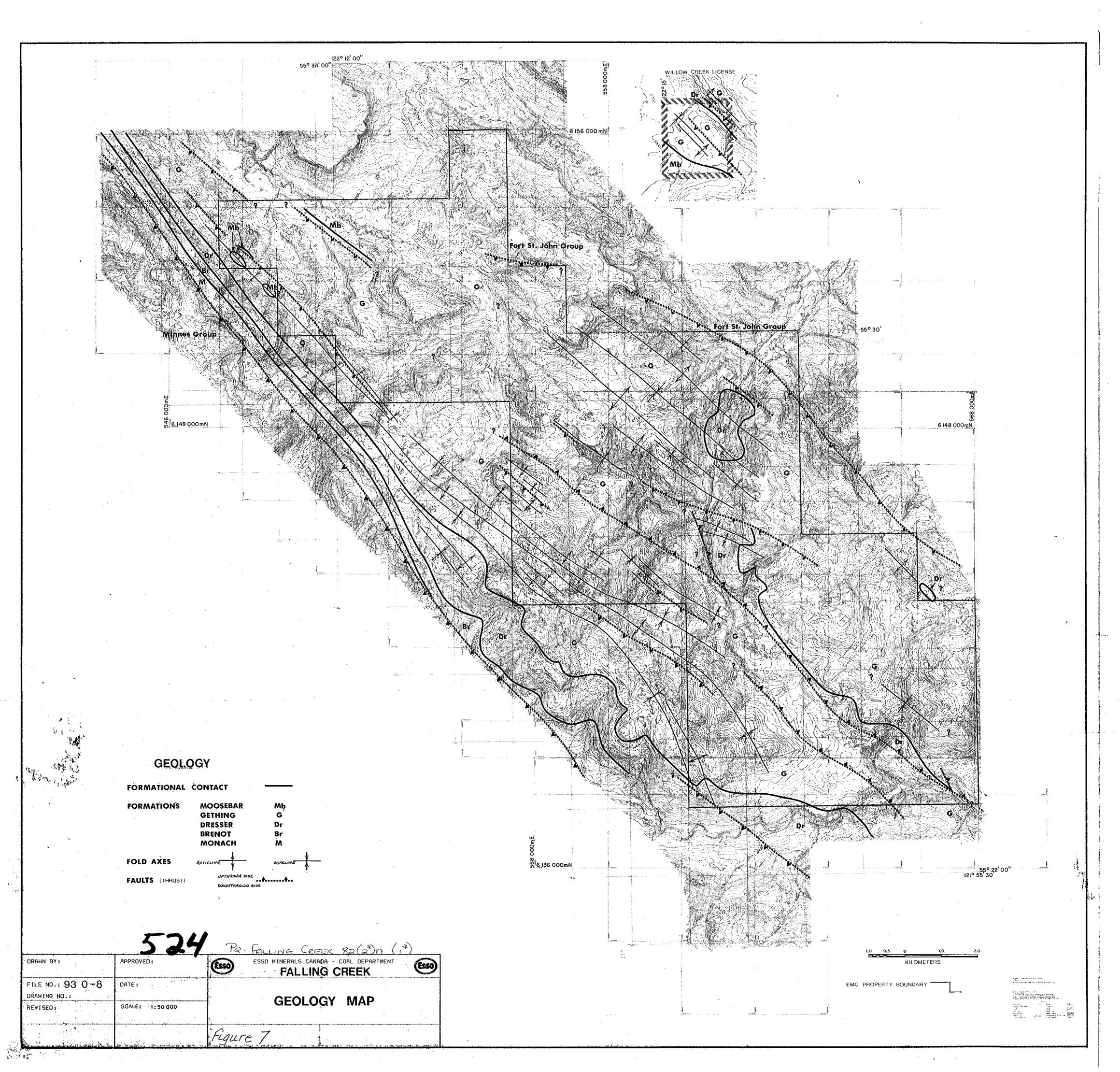
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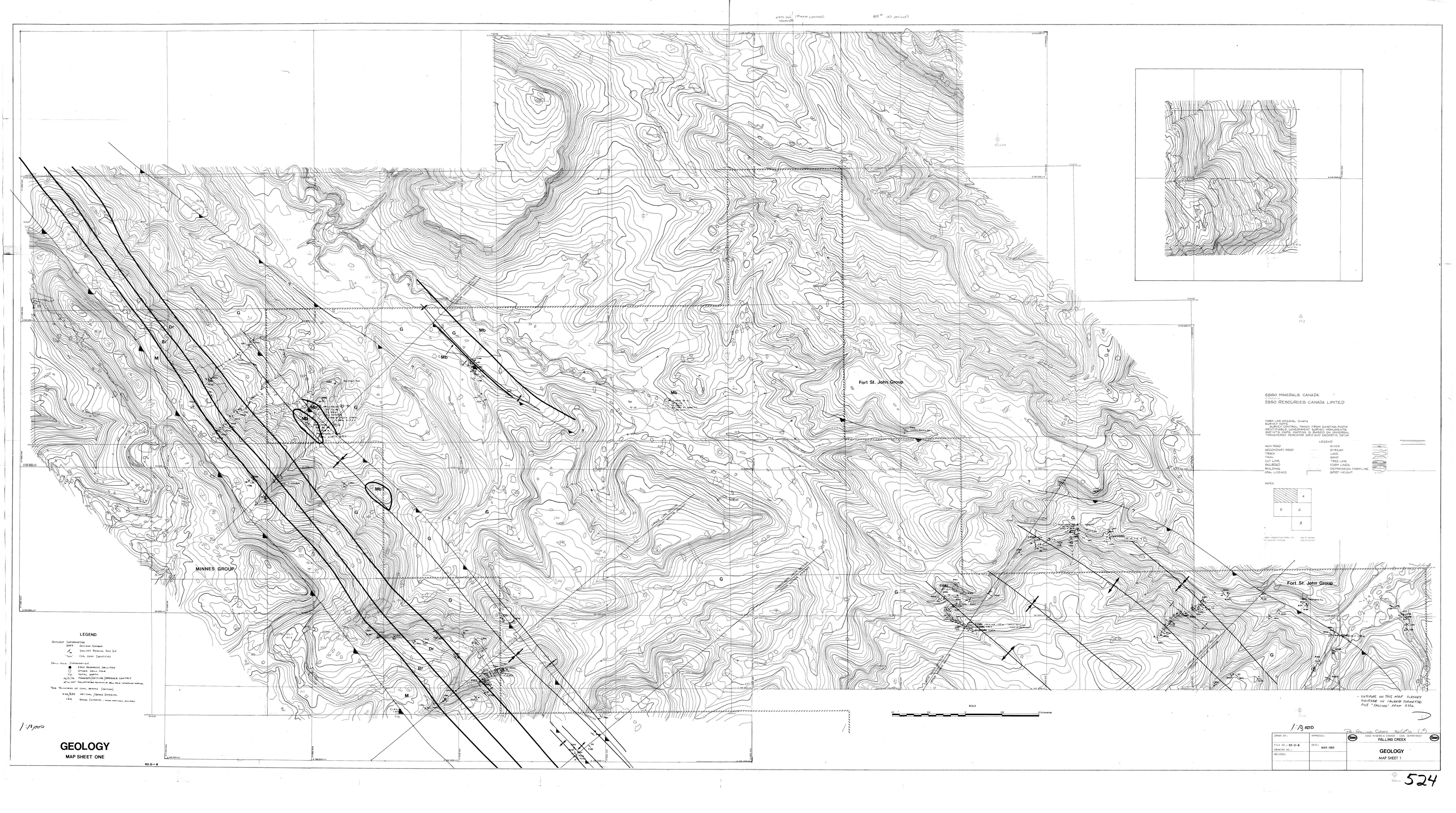
CHIP SAMPLE LOG AUGUST 22, 1982 FALLING CREEK PROJECT

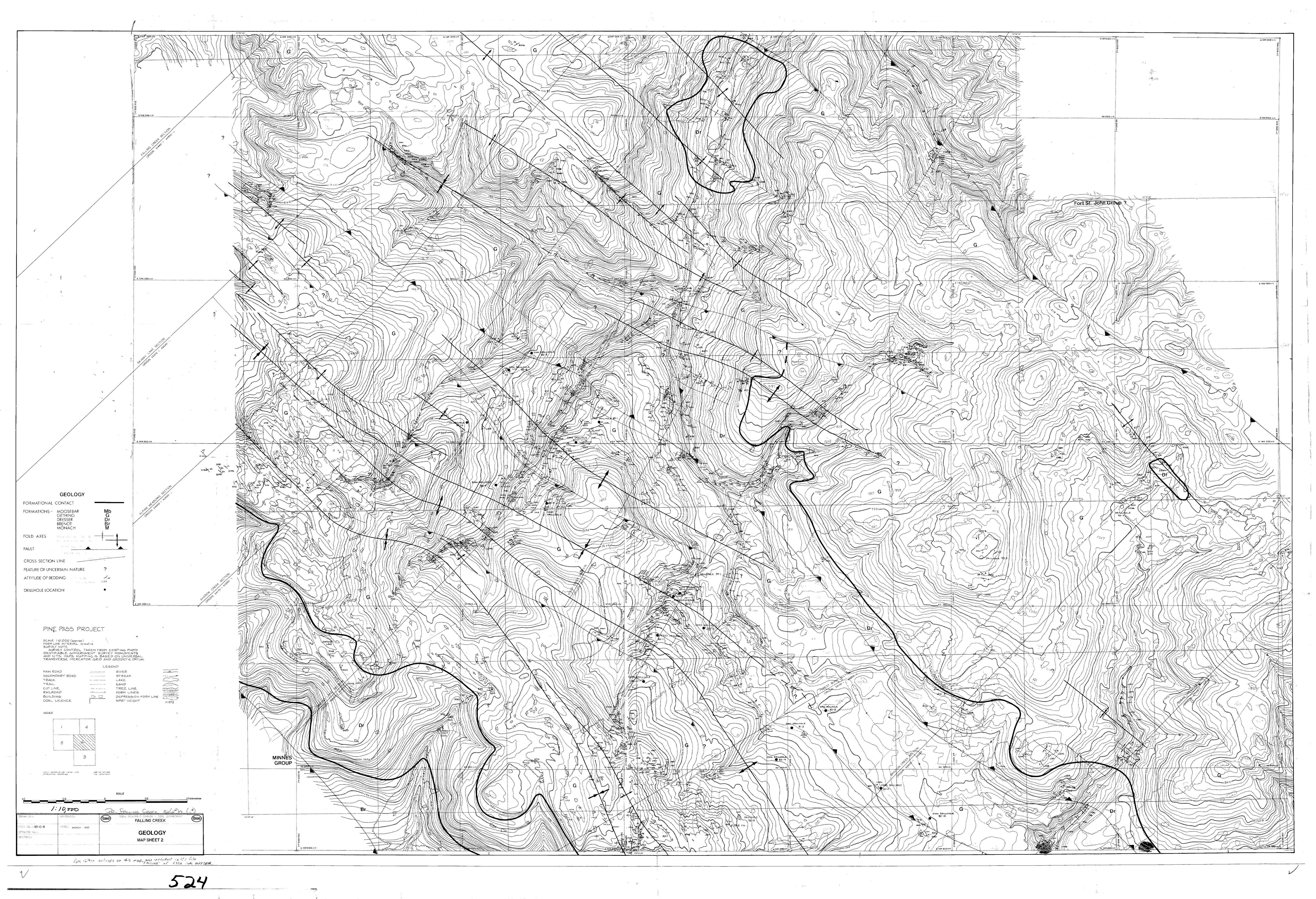
CORRECTED FROM GEOF		DR I LI DEI	LERS PTH			
FROM	то	FROM	то	MAIN LITHOLOGY Slitstone	LITHOLOGIC DESCRIPTION	SAMPLE
	·	138	141	Siltstone	Medium dark grey - minor carbonaceous mudstone and sandstone (fine grained), trace of pyrite flecks and tiny carbonaceous fragments	,
		141	144	Sandstone	Approximately 60% dark grey, very fine grained; approximately 35% fine and medium salt and pepper sandstone (40/60), rare coarse grained carbonaceous sandstone, laminations in very fine grained sandstones, less than 5% carbonaceous mudstone and carbonaceous fragments, trace white quartz fragments, rusty and red sandstone fragments	
		144	147	Sandstone	Very fine grained, medium dark grey, some laminations, minor carbonaceous mudstone (approximately 5%), minor fine grained sandstone (approximately 10%), trace carbonaceous fragments	
		147	150	Sandstone	Fine grained, medium dark grey to medium grey, trace white quartz fragments, much less than 5% coal fragments	
		150	153	Mudstone	Dark grey carbonaceous, coal stringers and plant fragments within, some silty to minor amount's of siltstone, less than 5% bright coaly fragments	
153.54	154,36	153	156	Mudstone	Dark grey, slightly carbonaceous and silty, minor fragments of fine grained sandstone, trace coal fragments, traces of pyrite-like flecks, sample had a skim of floating powdered coal and was very muddy	Coal seam not recovered
		156	159	Siltstone	Medium grey color, minor sandstone, very fine to fine grained, trace calcite surfaces and carbonaceous fragments	
		159	162	Sandstone	Very fine (upper) grained, dark grey, carbonaceous sandstone with few plant fragments, cross laminations, less than 5% sheared carbonaceous mudstone fragments, less than 5% upper fine grained salt and pepper sandstone, trace carbonaceous fragments	
					·	

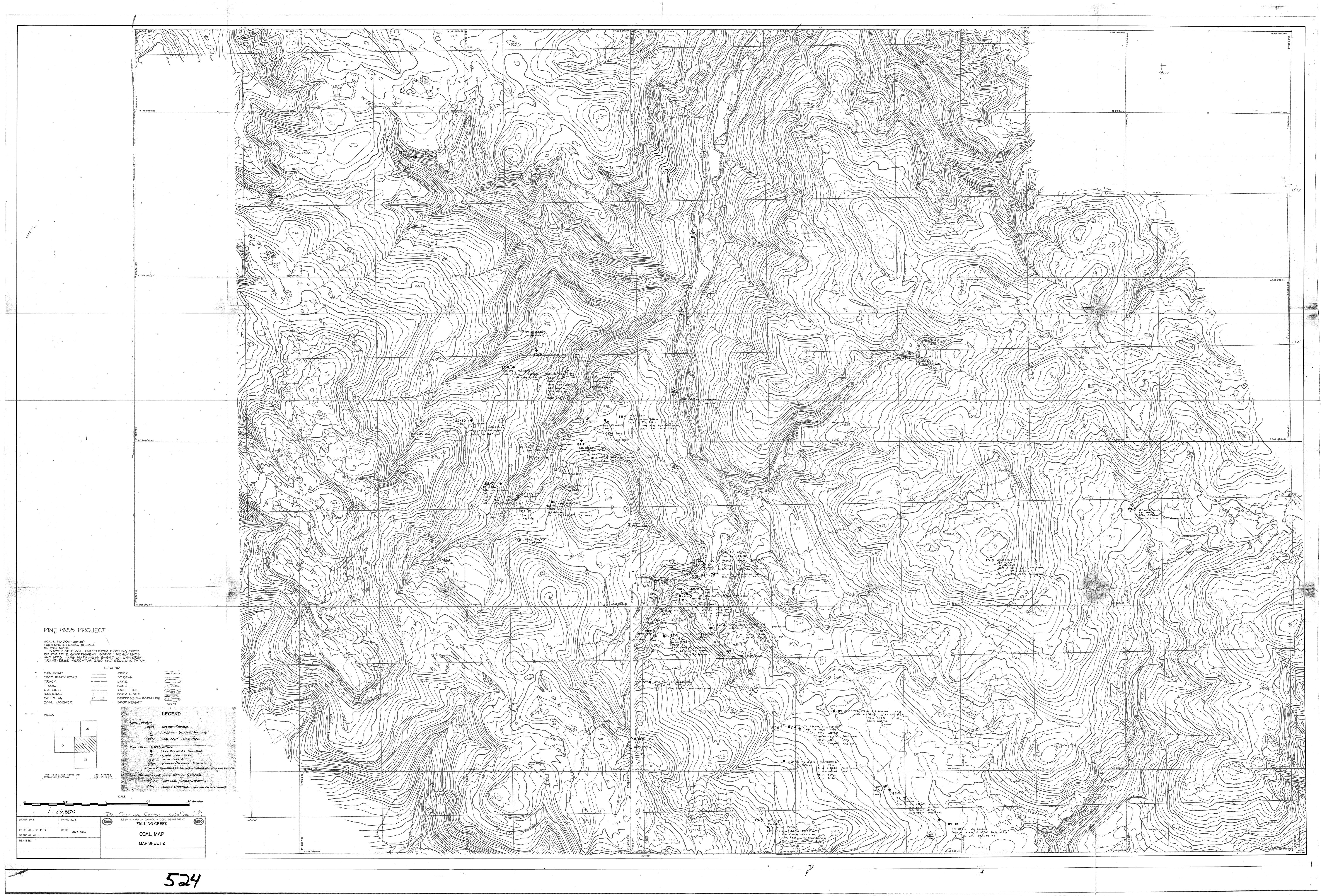
CHIP SAMPCE LOG AUGUST 21, 1982 FALLING CREEK PROJECT

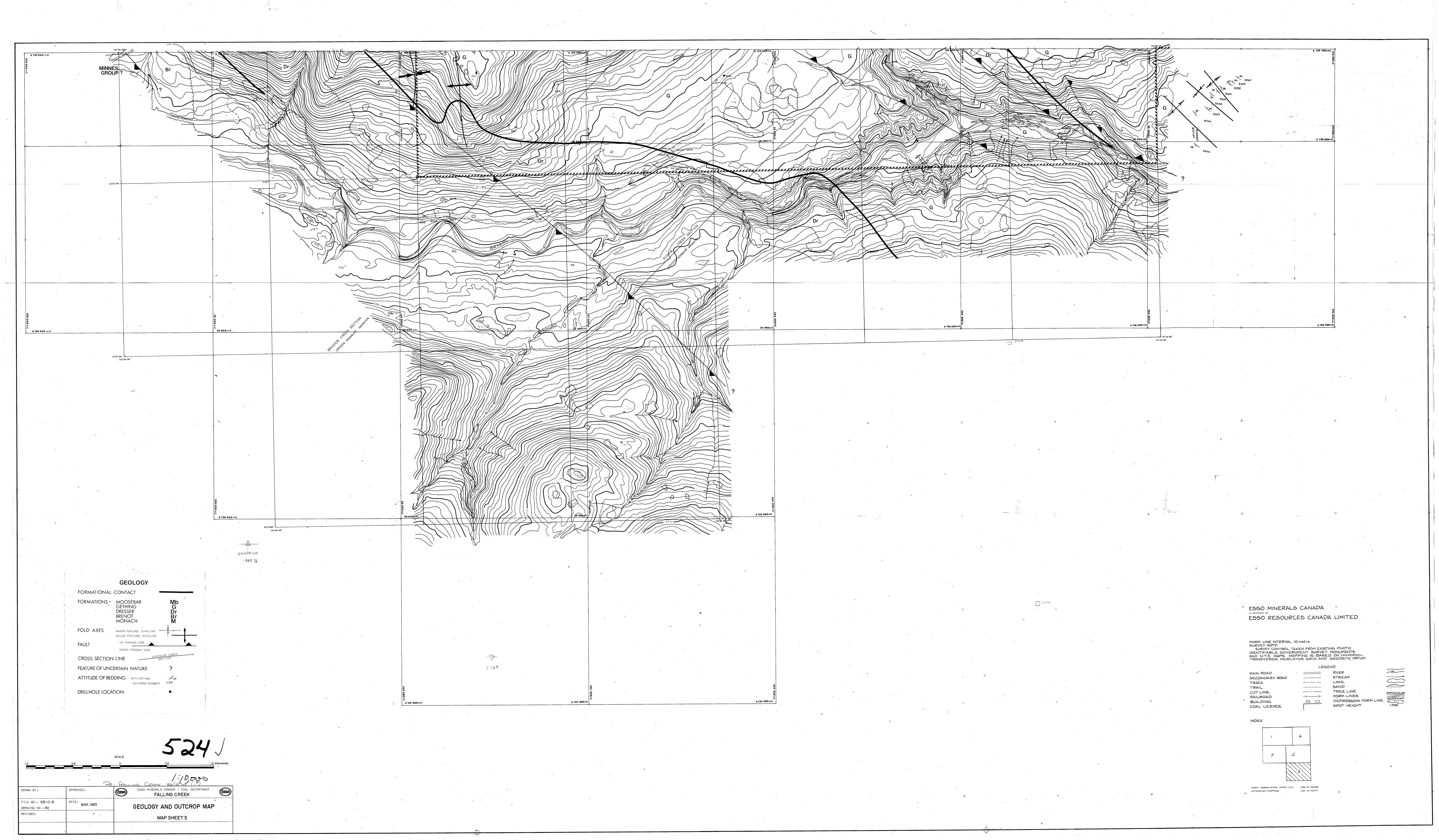
CORRECTE	H. LOGS	DR I L	?TH'			
FROM	то	FROM	ТО	MAIN LITHOLOGY	LITHOLOGIC DESCRIPTION	SAMPLE
		162	165	Sandstone	Very fine grained, medium dark grey, 1 mm to 2 x 3 cm size, minor fine grained sandstone, trace white quartz fragments, trace pyrite like flecks	
163.38	165.30	165	168	Siltstone/Mudstone	Medium to medium dark grey, most chips less than 1 mm but up to cm scale, siltstone dominates, very minor fine grained salt and pepper sandstone, approximately 30% bright with dull and bright coal fragments not exceeding 1 mm size	coal seam not recovere
. ,		168	170	Siltstone	Medium grey, trace quartz and calcite fragments, much less than 5% coaly carbonaceous fragments, also much less than 5% (trace) fine grained upper, salt and pepper sandstone	
				T.D. = 170 metres	Broken Tricone END OF HOLE LOGGER'S DEPTH = 169 m	
;						

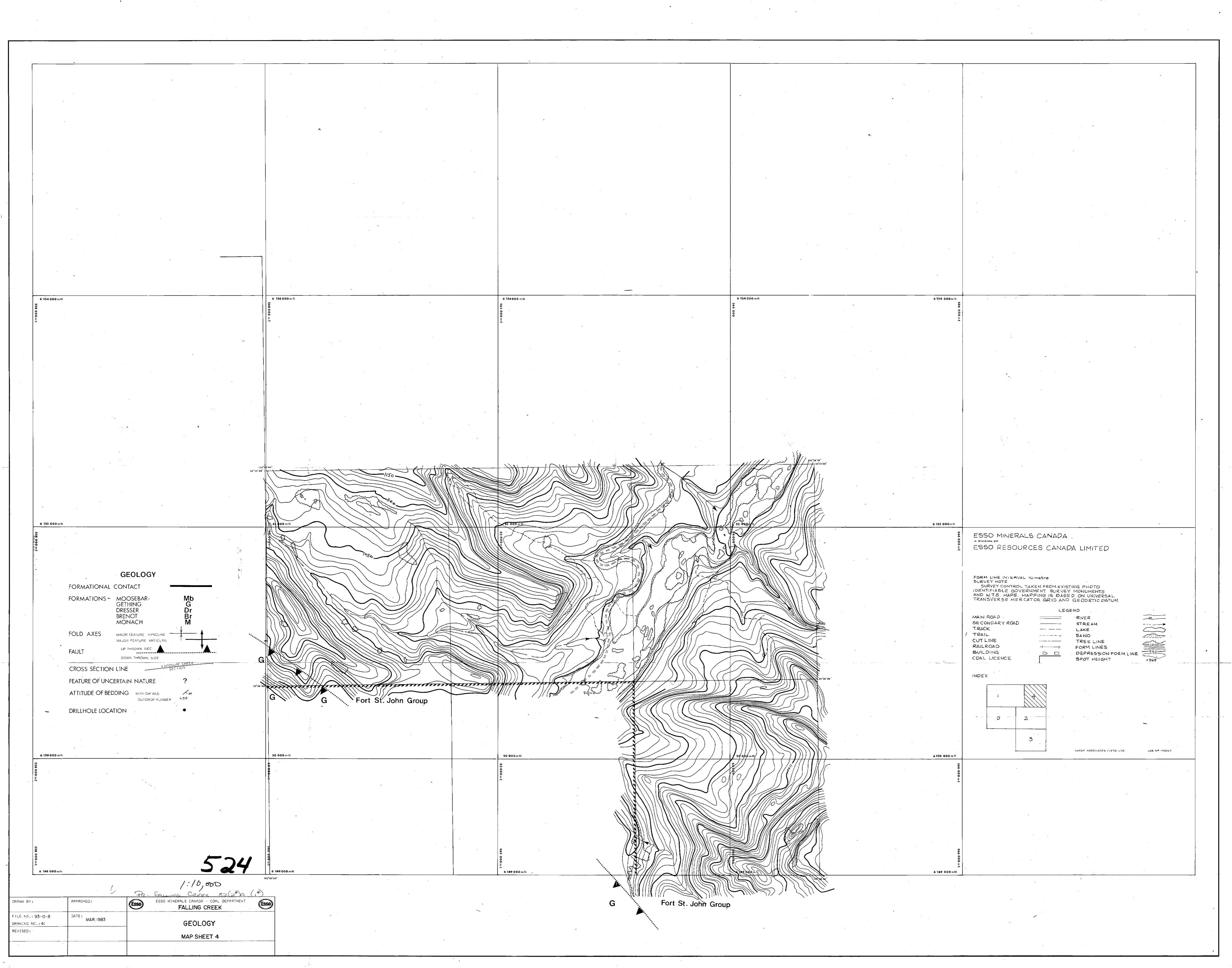


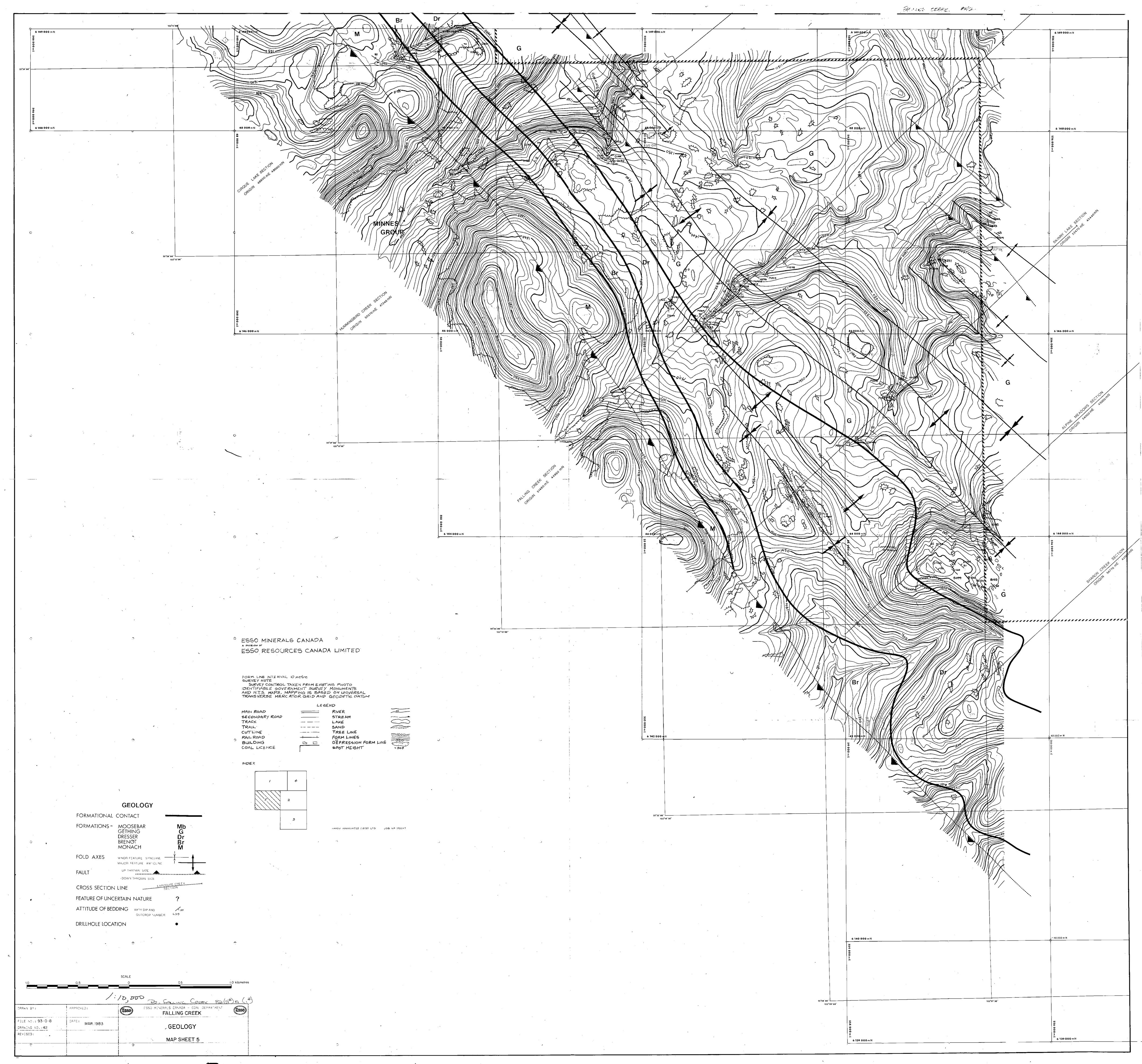


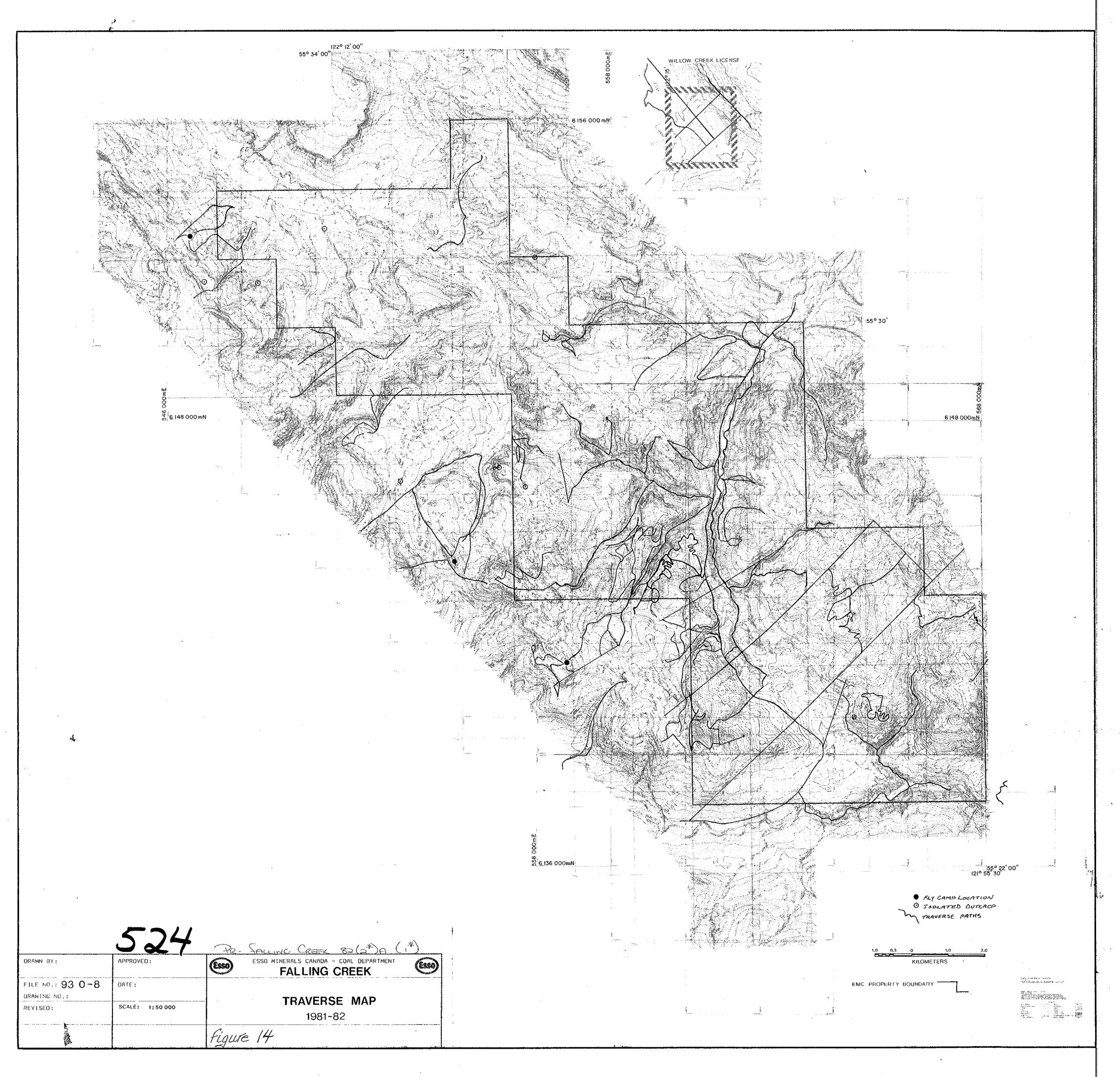


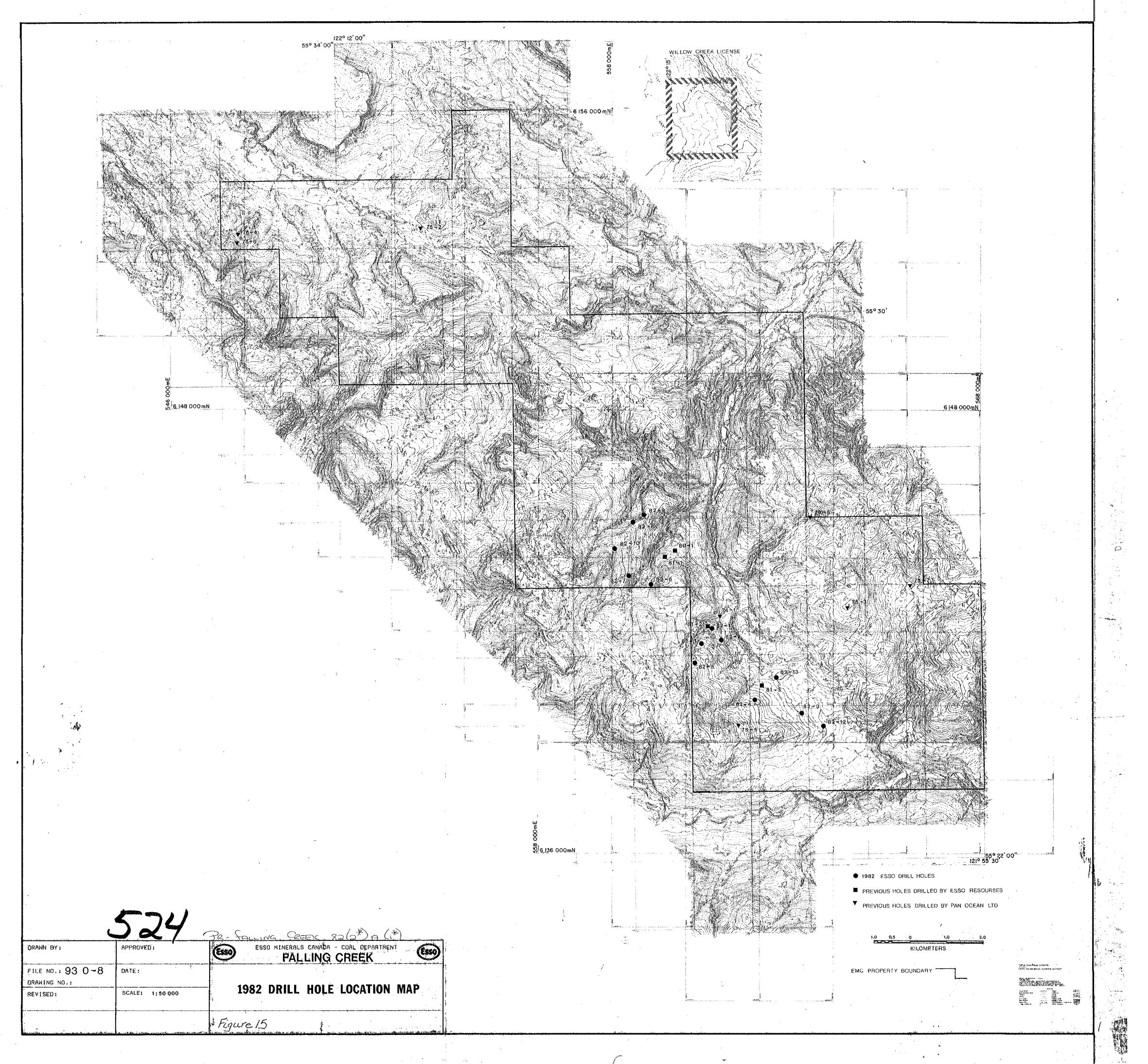


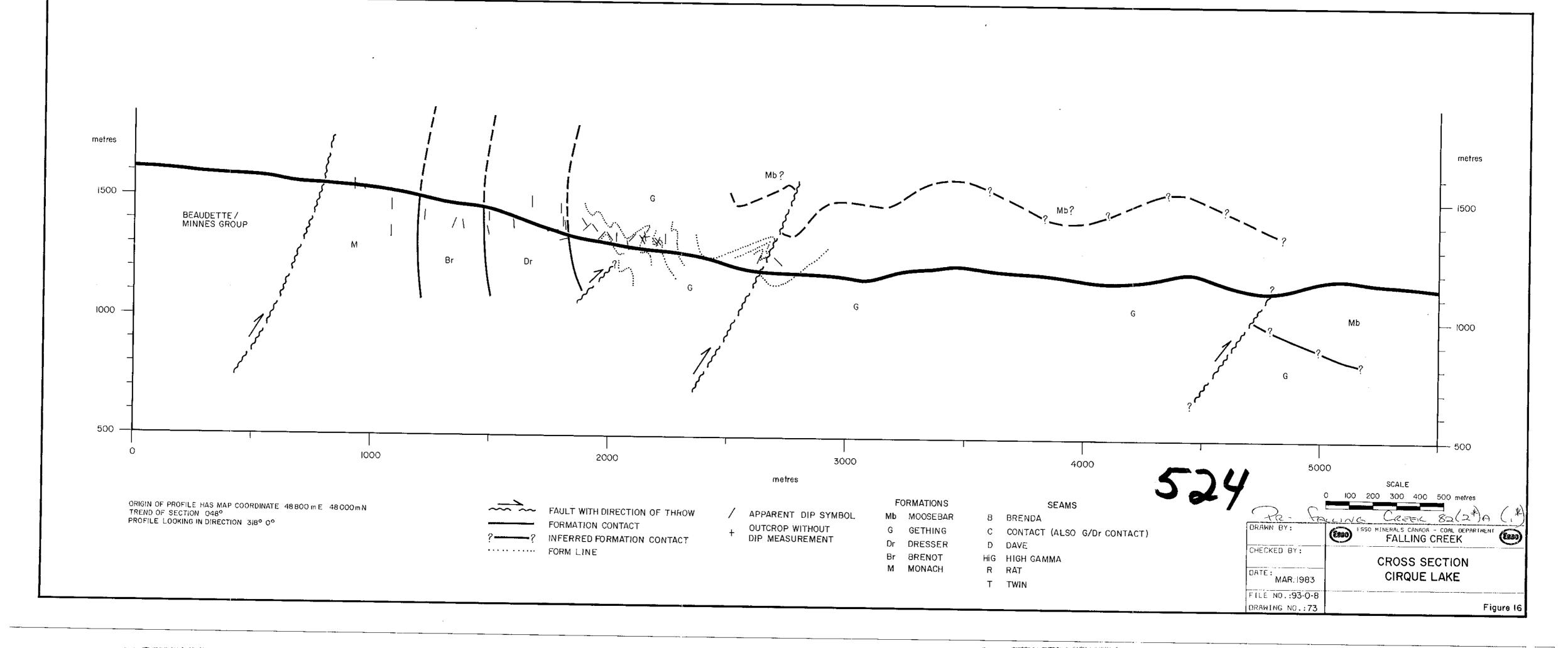


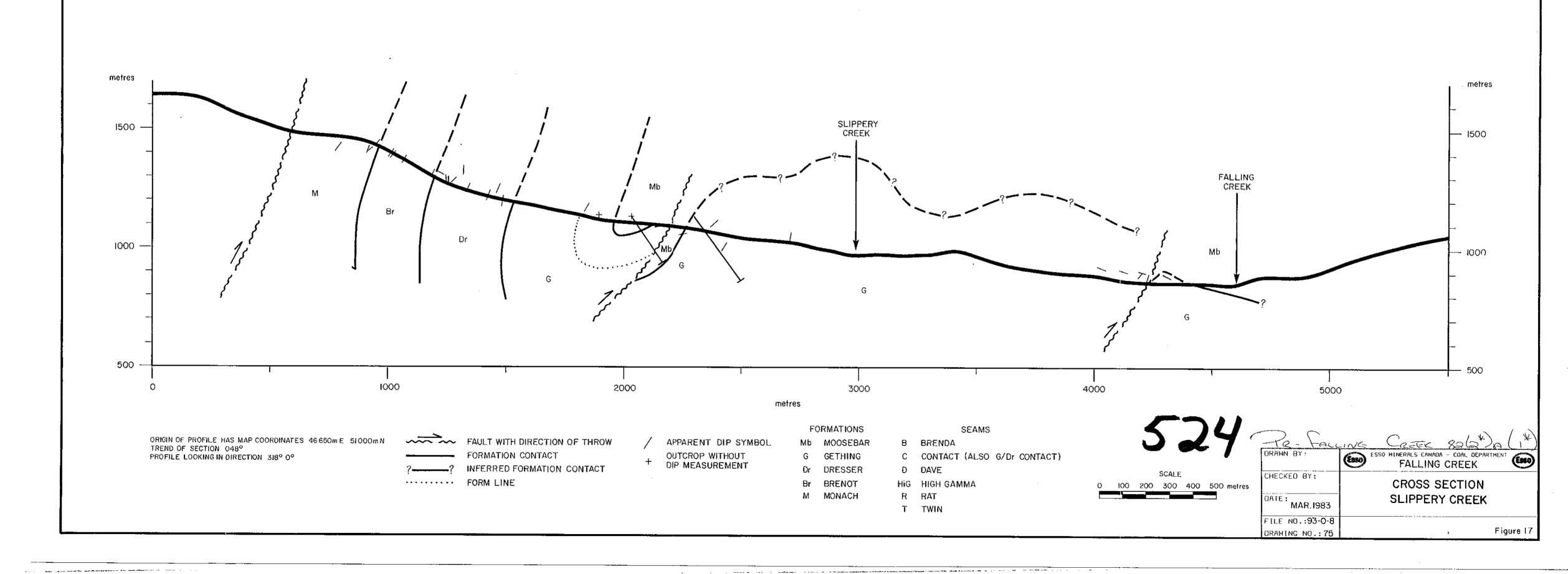


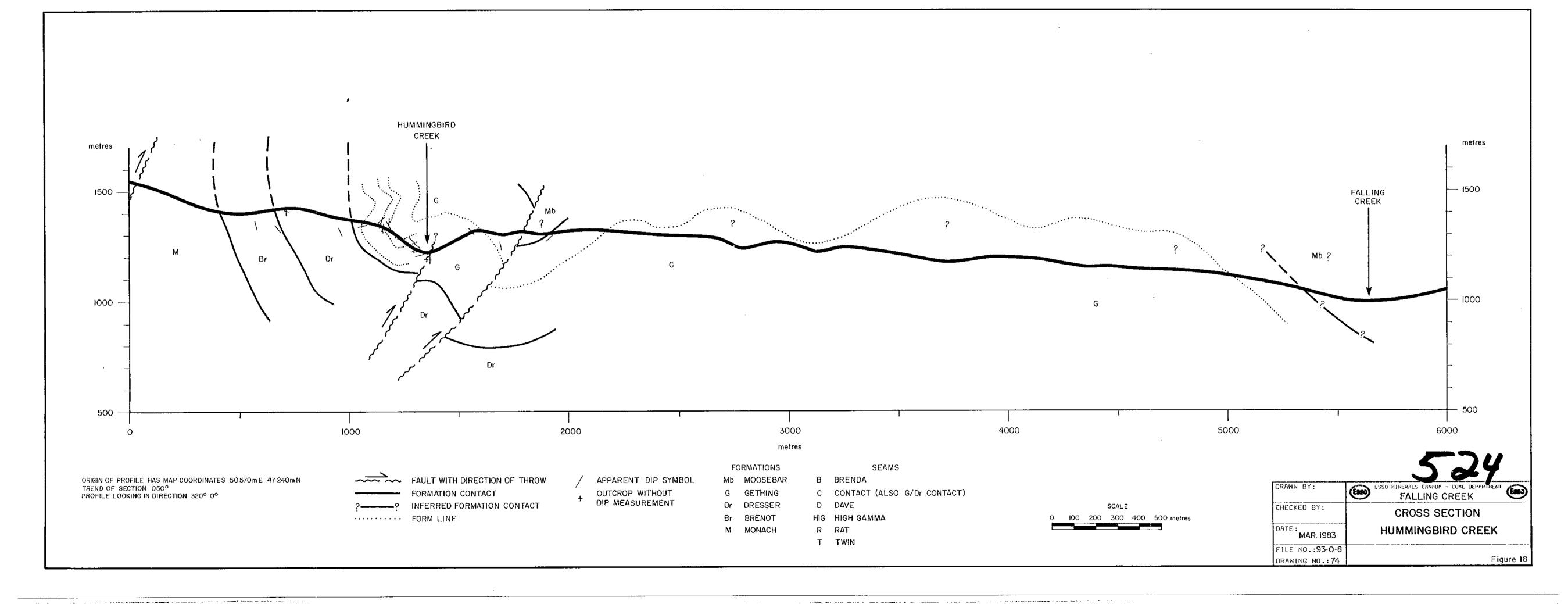


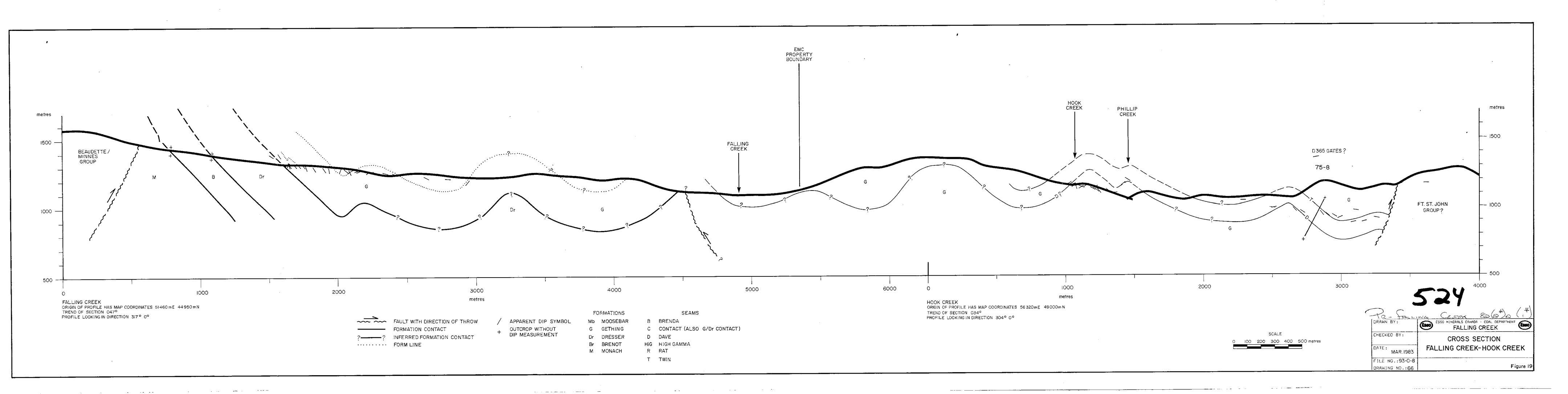


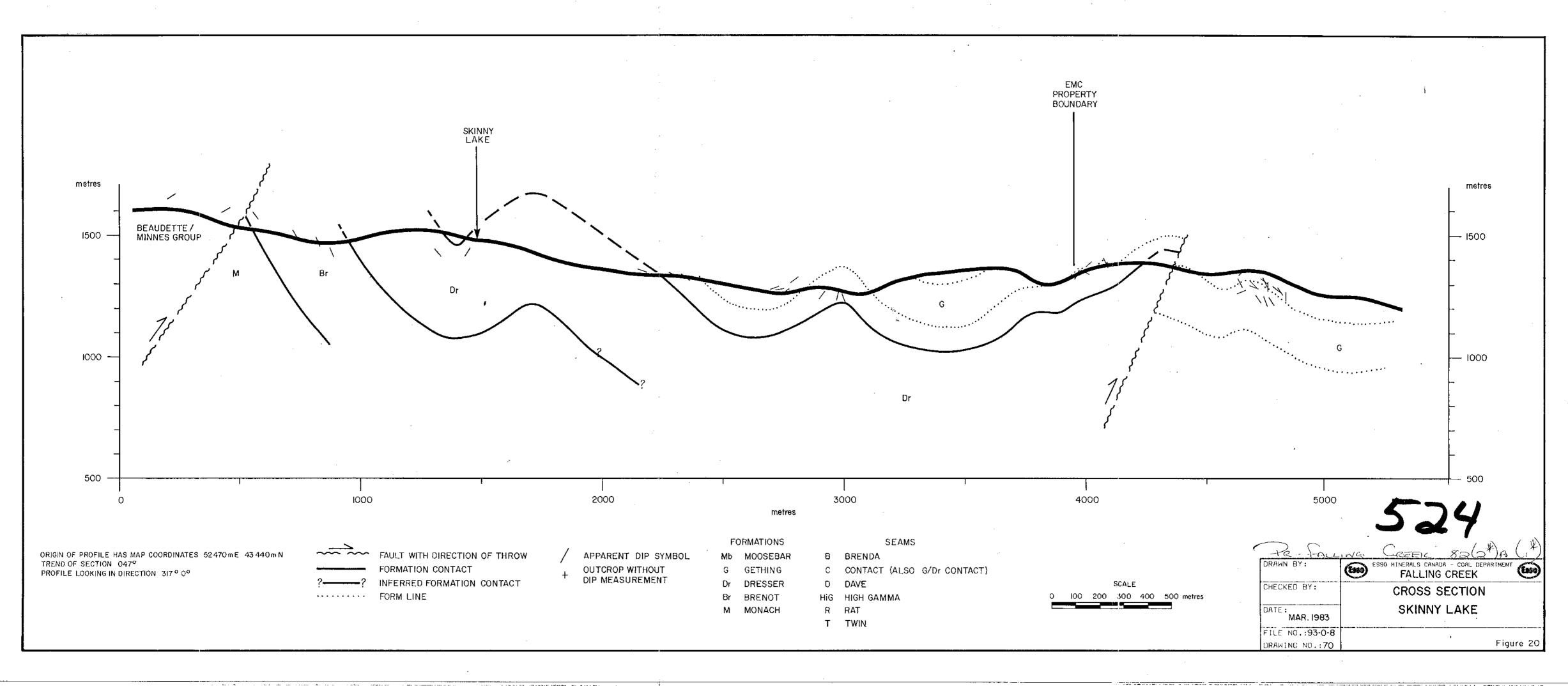


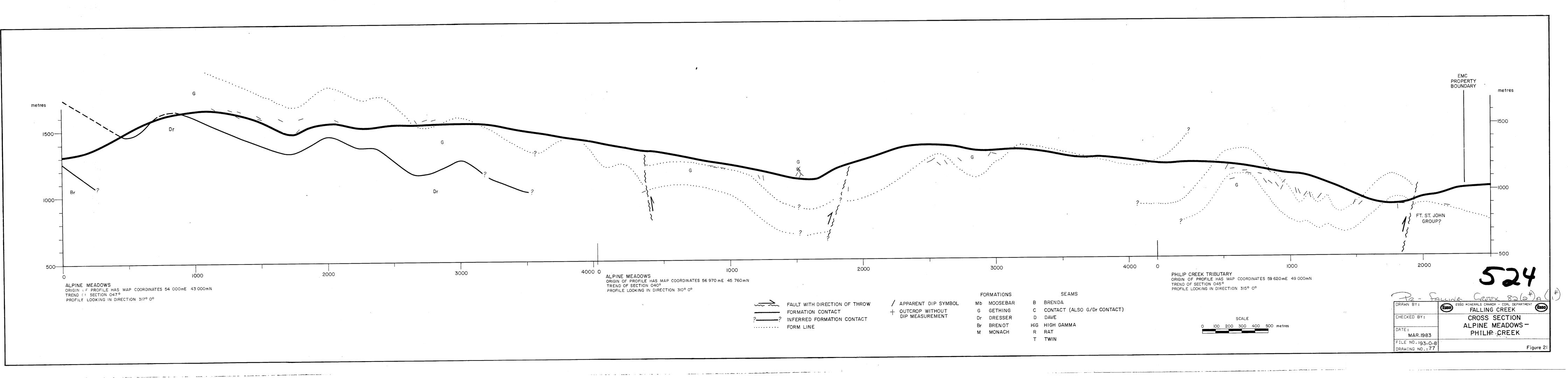




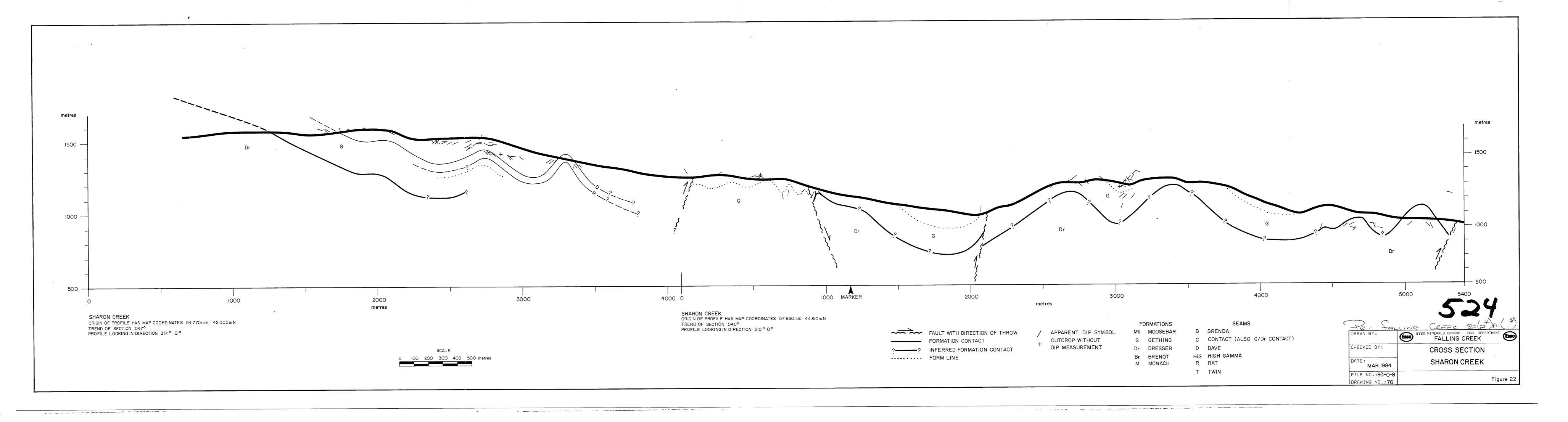


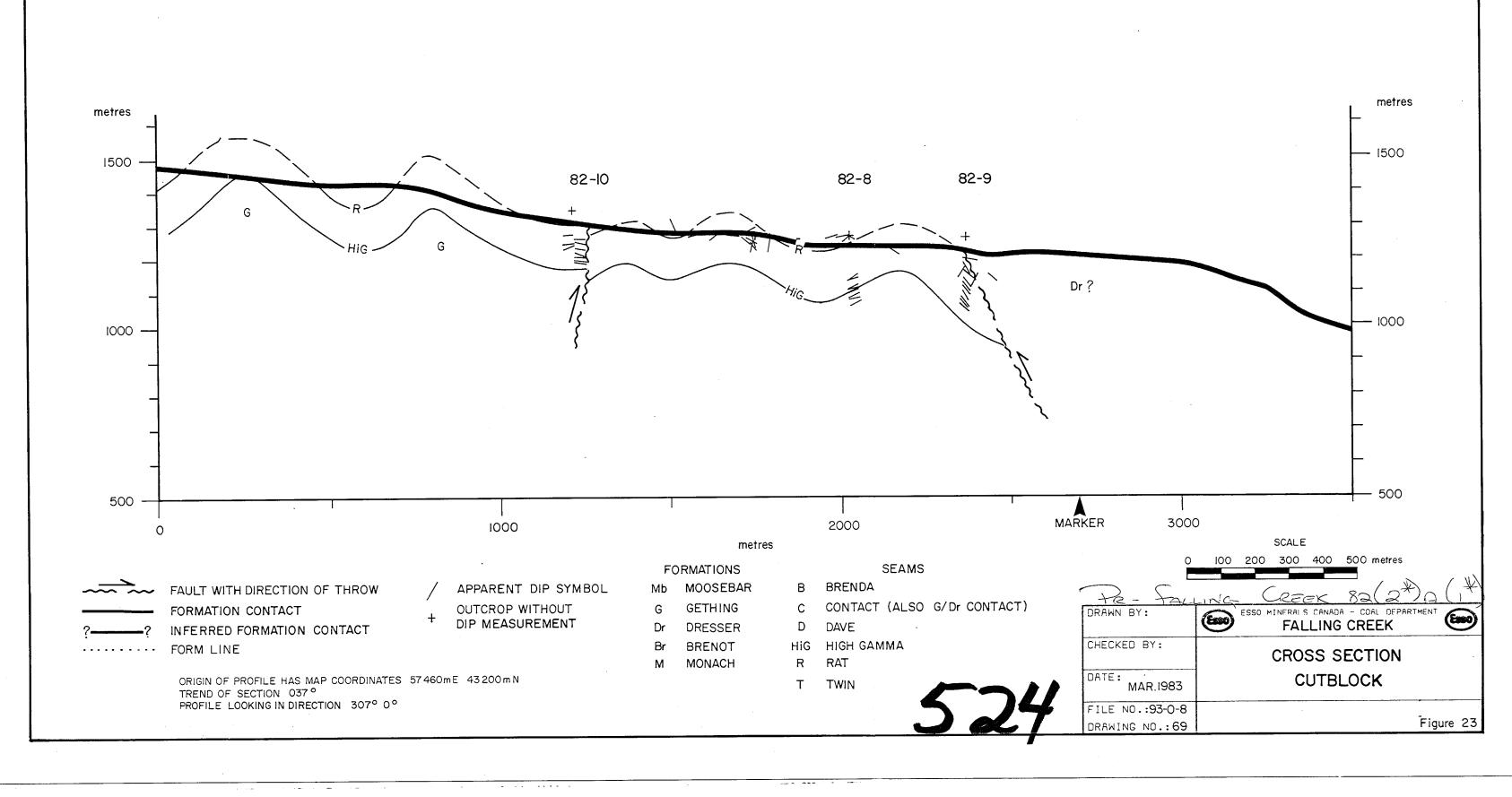


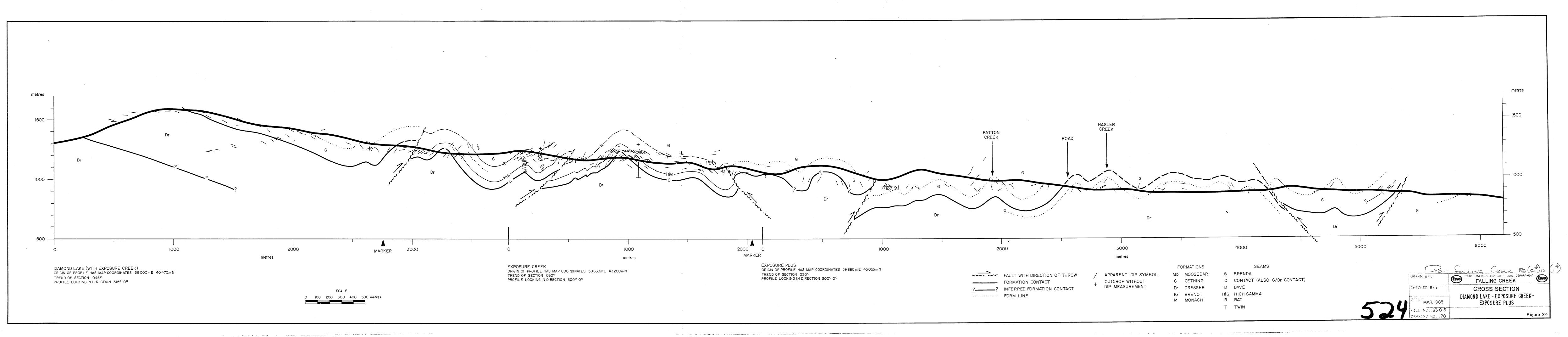


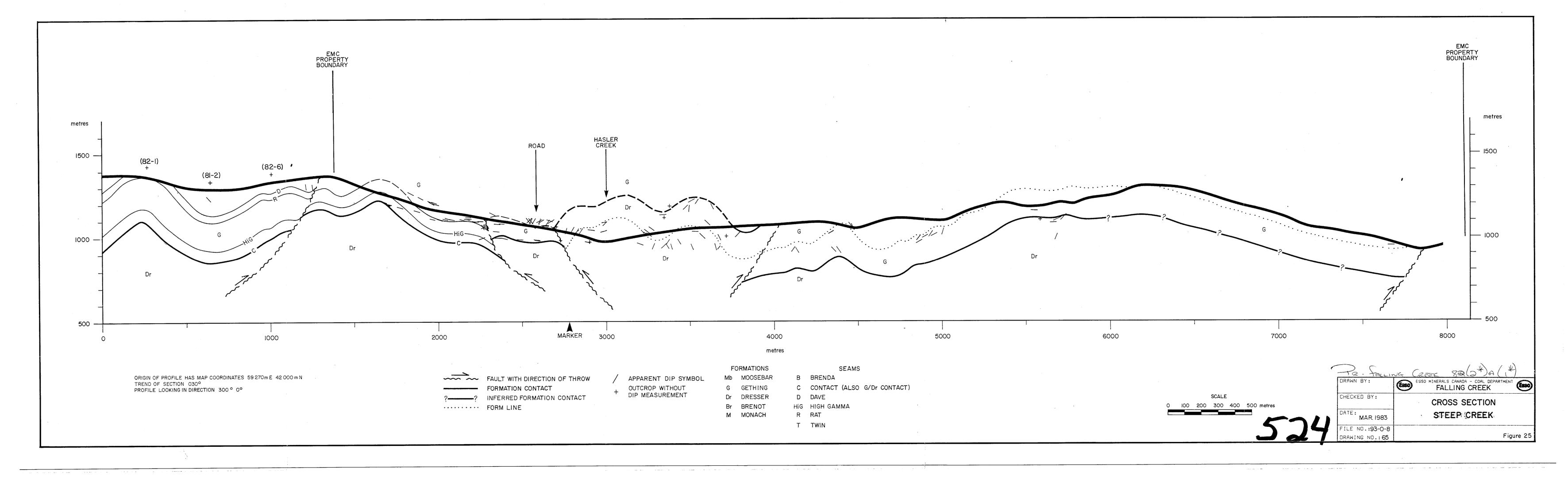


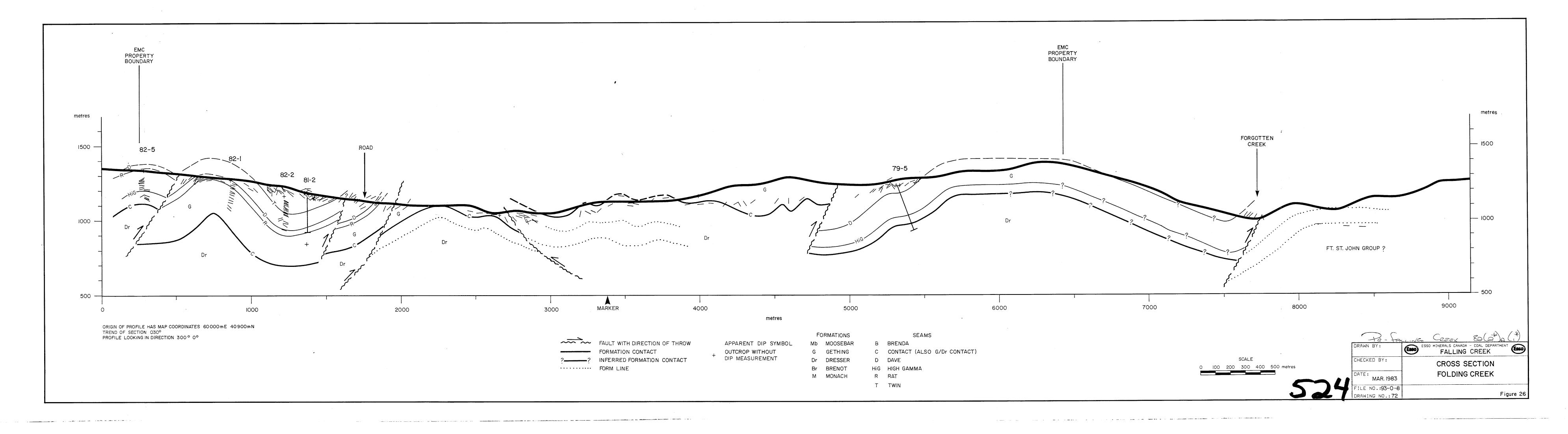
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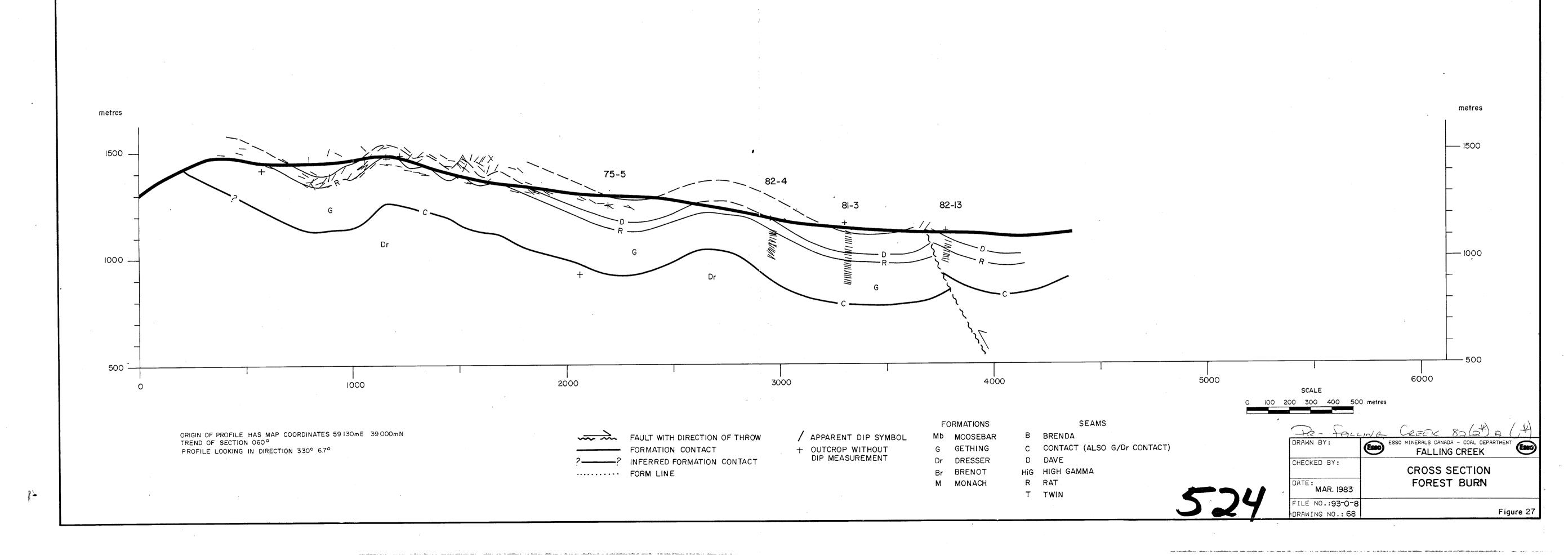


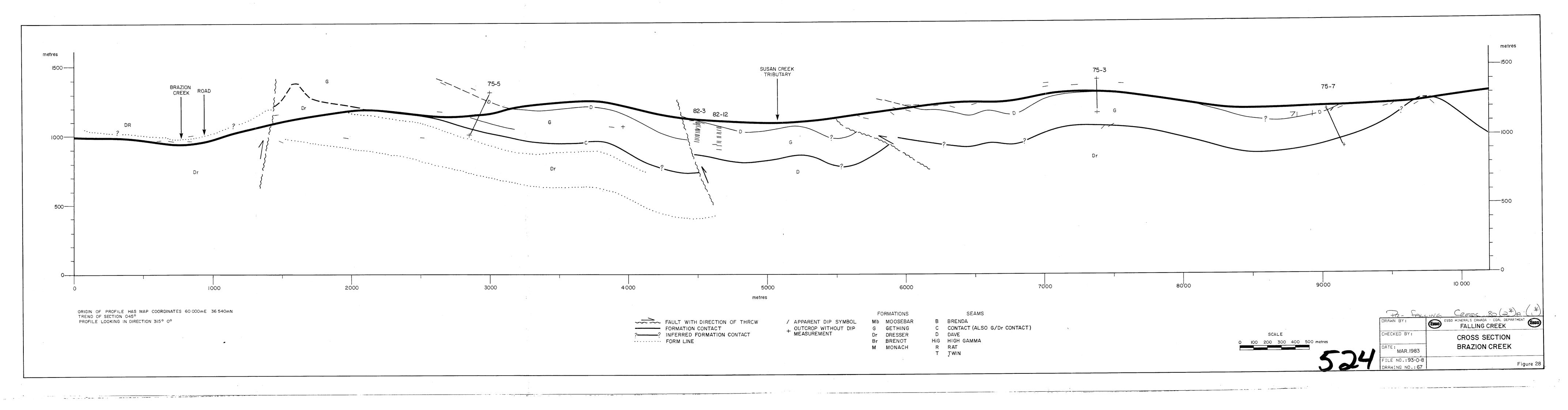


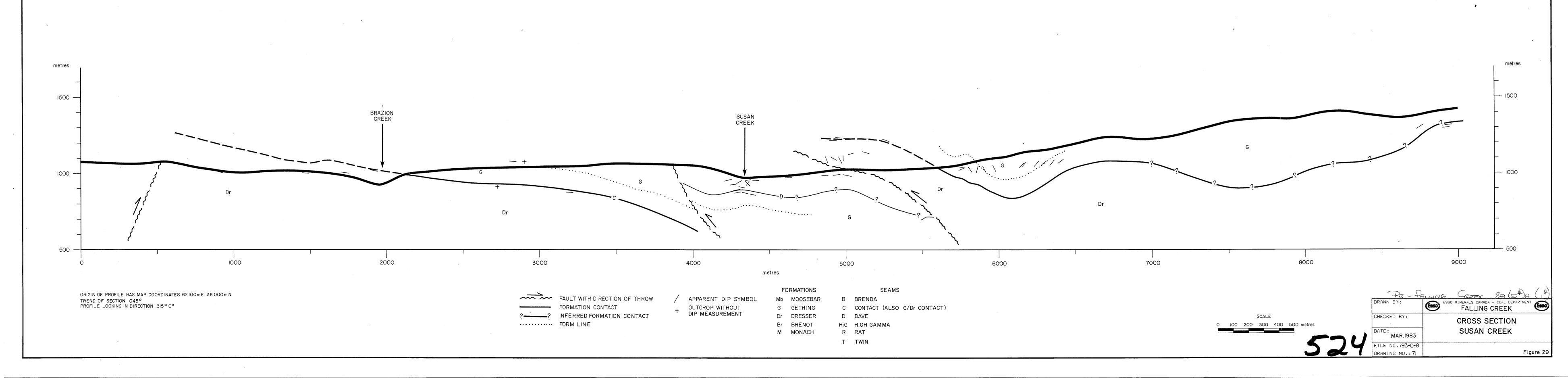


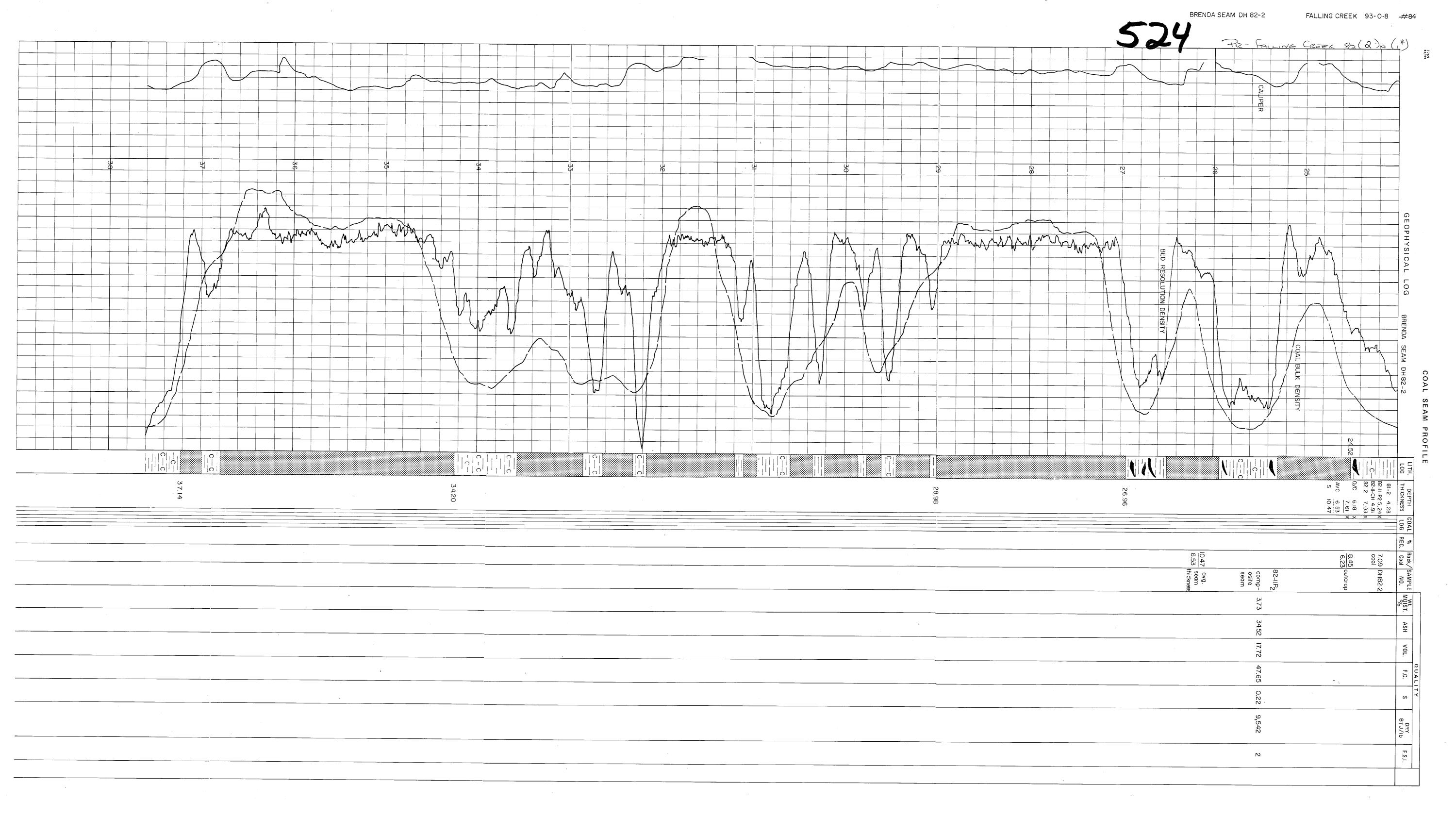


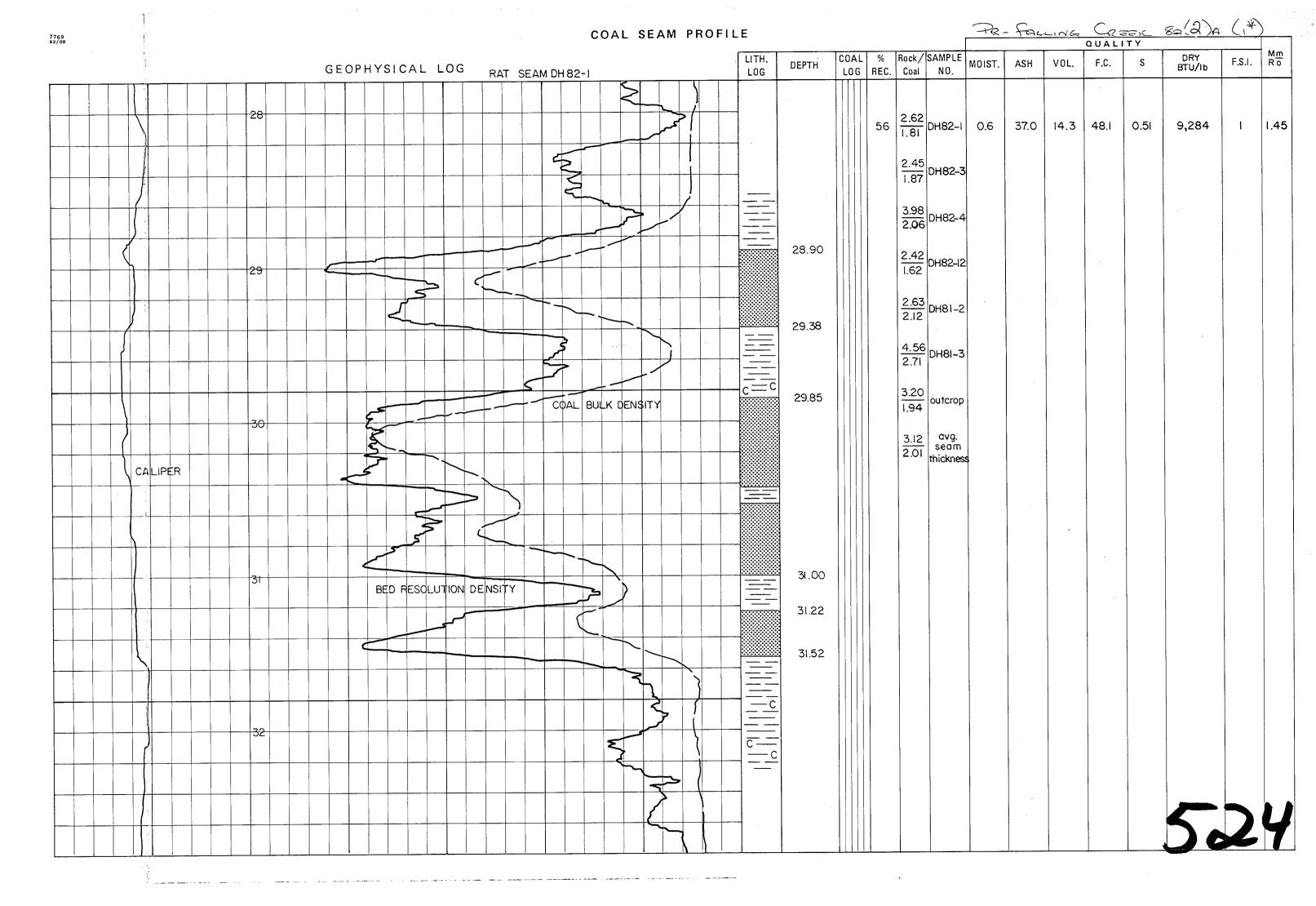












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PROXYMPTE ANALYSES

TEST RESULTS

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TABLE 8

Proximate Analyses Test

BRENDA SEAM

		ADM	MOIST	VOL	ASH		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 and	40	Chip sam	ples n	ot tested	
DH	82-11P2	Samples	B58,	59, 60, 61,	62	All test	ted		

DH	82-11P2	BENCH											BTU/1b
	SAMPLE	THICKNESS		S.G.		н ₂ 0	۷O	L	ASH	KG	F/C	WT%	DRY
				•									
	В58	1.2	x	1.625	5	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
	В60	1.2	x	2.075	i	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	2.46	x	1.35		4.18	19	•97	5.95	3.32	74.08	27.9	14,477
		7.60								11.88		99.91	
	в58					0.72	3	. 45	5.04		7.90		1,722
	В59					0.9	4	.31	8.30		9.94		2,043
	в60					0.84	2	.43	14.80		3.72		691
	B61					0.11	1	• 96	4.72		5.42		1,047
	B62				_	1.16	5	<u>.57</u>	1.16		20.67		4,039
	TOTAL					3.73	17	.72	34.52		47.65		9,542
													^
DH	82-11CH												BTU/1b
	SAMPLE	LENGTH	S.G	;.	WT		WT%	H ₂ 0	VOL	AS	H	F/C	DRY
	CORE 1	1.33	1.5	527	2.03	3	20.06	2.28	19.8	30 22.	02 5	8.17	11,420
	CORE 2	1.42	1.9)5	2.7	7	27.37	1.55	15.4	3 60.	08 2	4.49	5,119
	CORE 3	1.26	1.8	375	2.30	6	23.32	1.62	14.3	37 53 .	17 3	2.45	6,214
	CORE 4	2.16	1.3	37	2.9	<u> </u>	29.25	2.01	22.1	.9 7.	65 7	0.15	14,054
		6.17			10.12	2	100%						
	CORE 1							0.45	7 3.9	7 4.	42 1	1.67	2,291
	CORE 2							0.42	4 4.2	22 16.	44	6.70	1,401
	CORE 3							0.37	8 3.3	35 12.	40	7.57	1,449
	CORE 4 -							0.58	8 6.4	9 2.	<u>24</u> <u>2</u>	0.52	4,111
	TOTAL							1.84	7 18.0	35.	5 4	6.46	9,252

Table 8 Cont'd

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
во49 т	6.9	0.22	_	3.4	18.5	41.0	37.1	7,137
М	6.8	0.31	-	2.4	22.7	13.9	61.0	11,686
В	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 81-1	FSI	S	ADM	MOIST	VOL	ASH	F/C	DRY BTU/15
SAMPLES 9-13	2 1/2	0.4	1.7	0.6	21.3	9.7	68.4	13,694

DH 82-2 NO SAMPLE

Table 8 Cont'd

DA.	VΕ	SEAM

	SAMPLE #	REC	MmR _O	FSI	S	ADM	MOIST	VOL	ASH	F/C	DRY BTU/1Ъ
J	DH81-2 18 (Coal)	40%	-	-	0.27	1.7	0.4	16.2	13.2	70.2	13,252
	DH81-3										
<u>\</u>	35, 38	50%	1.3A	N.A.	0.23	1.4	0.7	14.0	54.7	30.6	-
	DH82-1	+28m	-28m Wt?	%							
	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
	\Rightarrow	COMPOST	TE				0.78	13.01	46.08	41.29	8,036
	В46	44.5					1.33	12.80	48.62	38.58	7,414
			55.5				1.55	17.32	24.61	58.07	11,414
		COMPOSI	TE				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

Table 8 Cont'd

SAMPLE #	REC	MmR _o	FSI	S	ADM	MOIST	VOL	ASH	F/C	DRY BTU/1b
DH81-2										
19,23,24,25	56%	1.45	1	0.51	1.8	0.6	14.3	37.0	48.1	9,284
DH81-3										
44,45	67%	-	-	0.42	1.5	0.7	12.1	62.2	25.0	-
Surface O/C										
B062T	-	1.04	_	0.40	20.0	15.5	21,3	27.0	36.2	6,813
В	-	0.96	-	0.29	24.1	9.2	18.9	41.9	30.0	5,458
70.50M		1 20			00.0	0.5	0/ 1		-1 -7	2 (22
B059T	-	1.32	-	0 . 59	23.0	8.5	24.1	15.7	51.7	9,439
В		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

TABLE 9 ·

VITRINITE REFLECTANCE MEASUREMENTS

SEAM NAME	STRATIGRAPHIC DEPTH BELOW MOOSE BAR							OLE SAMPLE							
		81-1	81-2	81-3	82-1	82-2	82-3	82-4	82-5	82-6	82-7	82-8	82-11P ₁	B2-11P ₂	82-11 _{ch}
			R048(1.03	1)		V37(1.0	15)					·	V57(1.14)	V62(1.26) V64(1.00)	Core (0.97) Core (1.07)
Brenda	50 m														
Twin	155 m														
Dave	239 m		(1.26)	(1.38)	V45(1.28)		V34(1.14) V35(1.09)			V21(1.23) V22(1.34)					
Rat	261 m		(1.45)	(1.24)	V48(1.24)			V32(1.23)	V1(1.13	V27(1.24) 3)	V18(1.29)	V14(1.29 V15(1.26))		
High Gamma	392 m				•									•	
Contact	448 m		(1.31)												
									,) seams in DHS 2-12, 82-13 we	

for vitrinite reflectance

5 - 19

TABLE 10

RANK CALCULATION SUMMARY SHEET

Sa	mple	Rmo%	BTU/1b Qmmmf	Wt. % Vol. Mat. daf
BRENDA CORE 1	+ 28 m - 28 m	0.97	15,129 15,098	25.80 25.86
CORE 4	+ 28 m - 28 m	1.07	15,207 15,253	24.51 24.94
B56	+ 28 m - 28 m	1.14	15,098 15,050	22.76 23.55
B61	+ 28 m - 28 m		14,534 14,959	25.14 27.98
В62	+ 28 m	1.26	15,430 15,491	21.62 22.50
в53	Comp		14,108	32.60
DAVE B22	+ 28 m - 28 m	1.34	15,426 15,862	26.05 22.50
В46	+ 28 m - 28 m		14,481 14,204	25.32 23.55

TABLE 11 DETAILED RANK CALCULATIONS

BRENDA SEAM DM82-11CH

WT%									
CORE 1 + 28M	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data (Birtley)	-	2.10	24.30	19.00	54.60	0.39	6017	1/2	2.30
Dry Basis	-	-	24.82	19.40	55.7		6146		
Rank Calculation using Parr Formula Mineral Matter = $1.08 \times 24.30 + 0.55 \times 0.39 = 26.46$									
CV dry = 6146 cal/gm Qdmmf = 6146×100 = 8,603 cal/gm (15,485 BTU/1b) 100-2.1 + 26.46									
Qmmmf =	$8,603 \times 100$	- 2.3	* 8,405 d	cal/gm (15,129 B	TU/1b)) =		

Vol Matter dry ash free basis = $\frac{19.40 \times 100}{100 - 24.82} = 25.80$

			W:	ľ%					
CORE I - 28 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data (Birtley)	-	2.6	18.70	20.40	58.30	0.45	6456	1/2	2.60
Dry Basis	-	-	19.20	20.90	59.80		6628		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 18.70 + 0.55 \times 0.45 = 20.44$

CV dry = 6628 cal/gm

Qdmmf = $\frac{6628 \times 100}{100 - 2.6 + 20.44}$ = 8,612 cal/gm (15,502 BTU/1b)

Qmmmf = $\frac{8612 \times 100 - 2.6}{100}$ = 8,388 cal/gm (15,098 BTU/1b)

Vol Matter dry ash free = $\frac{20.90 \times 100}{100 - 19.20} = 25.86$

CORE 1 Maceral Analysis (Esso Research Lab)

Mean Max reflectance = 0.97%

Vitrinite	55.1%
Liptinite	1.2
Semifusinite	24.9
Fusinite	4.5
Other inertinite	9.6
Minerals	4.7

BRENDA SEAM DM82-11CH

Qmmmf

WT%											
CORE 4 + 28M	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM		
Lab Data (Birtley)	-	1.60	8.30	22.10	68.00	0.30	7619	2	2.60		
Dry Basis	-	-	8.40	22.45	69.10		7743				
Rank Calculation using Parr Formula Mineral Matter = 1.08 x 8.30 + 0.55 x 0.30 = 9.13 CV dry = 7743 cal/gm Qdmmf = 7743 x 100 = 8,743 cal/gm (15,613 BTU/1b)											

= 8674 x 100 - 2.6 = 8,448 cal/gm (15,207 BTU/1b)

 $\frac{22.45 \times 100}{100 - 8.40}$ Vol Matter dry ash free basis =

100

WT%										
CORE 4 - 28 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM	
Lab Data (Birtley)	-	2.00	7.80	22.50	67.70	0.30	7631	2	2.70	
Dry Basis	-	-	7.96	22.96	69.08		7787			

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 7.80 + 0.55 \times 0.30 = 8.59$

= 7787 cal/gmCV dry Qdmmf

= $\frac{7787 \times 100}{100 - 2.0 + 8.59}$ = 8,709 cal/gm (15,677 BTU/1b)

 $= 8709 \times 100 - 2.70 = 8,474 \text{ cal/gm} (15,253 \text{ BTU/1b})$ Qmmmf

Vol Matter dry ash free = $\frac{22.96 \times 100}{100 - 7.96}$ = 24.94

CORE 4 Maceral Analysis (Esso Research Lab)

Mean Max reflectance = 1.07%

43.2%
1.4
33.3
2.5
17.2
2.4

BRENDA SEAM LOWEST BENCH DH82-11PI Chip Sample

			W3	[%					
B56 + 28M	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data (Birtley)	2.90	1.00	8.50	20.60	69.90	0.25	7638	1/2	2.50
Dry Basis	-	-	8.58	20.81	70.61		7715		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 8.50 + 0.55 \times 0.25 = 9.32$

CV dry = 7715 cal/gm

Qdmmf = $\frac{7715 \times 100}{}$ = 8,603 cal/gm (15,485 BTU/lb)

100 - 1.0 + 9.32

Qmmmf = $\frac{8603 \times 100 - 2.50}{100}$ = 8,388 cal/gm (15,098 BTU/1b)

Vol Matter dry ash free basis =
$$\frac{20.81 \times 100}{100 - 8.58}$$
 = 22.76

Vitrinite mean max reflectance = 1.14 (V57)

				WT	%					
в56	- 28 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data	(Birtley)	7.30	1.00	9.00	21.20	68.80	0.30	7605	1/2	3.00
Dry Bas	is			9.09	21.41	69.49		7682		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 9.00 + 0.55 \times 0.30 = 9.88$

CV dry = 7682 cal/gm

Qdmmf = $\frac{7685 \times 100}{2000 \times 1000}$ = 8,620 cal/gm (15,516 BTU/1b)

100 - 1.00 + 9.88

Qmmmf $= 8620 \times 100 - 3.00 = 8,361 \text{ cal/gm } (15,050 \text{ BTU/1b})$

Vol Matter dry ash free =
$$\frac{21.41 \times 100}{100 - 9.09}$$
 = 23.55

BRENDA SEAM

DH82-11P2 Chip Sample

				W?	1%					
B61	+ 28M	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Dat	a (Birtley)	-	1.10	30.50	17.20	51.20	0.21	5503	1/2	4.50
Dry Ba	sis			30.48	17.39	51.77		5564		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 30.50 + 0.55 \times 0.21 = 33.05$

CV dry = 5564 cal/gm

Qdmmf = 5564 x 100 = 8,449 cal/gm (15,209 BTU/1b)

100-1.10 + 33.05

Qmmmf = $8,449 \times 100 - 4.50 = 8,069 \text{ cal/gm } (14,524 \text{ BTU/1b})$

Vol Matter dry ash free basis =
$$\frac{17.39 \times 100}{100 - 30.84}$$
 = 25.14

WT%										
B61 - 28 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM	
Lab Data (Birtley)	-	1.10	40.30	16.40	42.20	0.19	4612	1/2	1.50	
Dry Basis			40.75	16.58	42.67		4663			

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 40.30 + 0.55 \times 0.19 = 43.63$

CV dry = 4663 cal/gm

 $Qdmmf = 4663 \times 100 = 8,437 \text{ cal/gm } (15,186 \text{ BTU/1b})$

100-1.10 + 43.63

Qmmmf = $\frac{8437 \times 100 - 1.50}{100}$ = 8,310 cal/gm (14,959 BTU/1b)

Vol Matter dry ash free =
$$\frac{16.58 \times 100}{100 - 40.75}$$
 = 27.98

BRENDA SEAM LOWER BENCH DH82-11P2 Chip Sample

				WI	%					
В62 -	+ 28M	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data	(Birtley)	-	1.90	6.10	19.90	72.10	0.29	7855	1 1/2	2.20
Dry Bas:	is			6.22	20.28	73.50		8007		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 6.10 + 0.55 \times 0.29 = 6.75$

CV dry = 8007

Qdmmf = $\frac{8007 \times 100}{100 \times 100}$ = 8,765cal/gm (15,777 BTU/1b)

100-1.09 + 6.75

Qmmmf = $8,765 \times 100 - 2.20$ = 8,572 cal/gm (15,430 BTU/1b)

Vol Matter dry ash free basis =
$$\frac{20.28 \times 100}{100 - 6.22}$$
 = 21.62

Mean Max reflectance Vitrinite = 1.26

			W'	T%					
B62 - 28 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data (Birtley)		4.40	5.40	20.30	69.90	0.30	7704	1 1/2	4.30
Dry Basis			5.65	21.23	73.12		8058		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 5.40 + 0.55 \times 0.30 = 6.00$

CV dry = 8058 ca1/gm

Qdmmf = $\frac{8058 \times 100}{1000}$ = 8,993 cal/gm (16,188 BTU/1b)

100-4.40 + 6.00

Qmmmf = $\frac{8993 \times 100 - 4.30}{100}$ = 8,606 cal/gm (15,491 BTU/1b)

Vol Matter dry ash free =
$$\frac{21.23 \times 100}{100 - 5.65}$$
 = 22.50

DAVE SEAM
DM82-6 Chip Sample + 28 m

WT%											
B22 15-18 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	ĘSI.	EqM		
Lab Data (Birtley)	-	1.50	53.20	11.80	33.50	0.56	3502		1.80		
Dry Basis	-	-	54.01	11.98	34.01		3555				
Rank Calculation using			₃r ∩ 56 ;	- 57 76							

Mineral Matter = $1.08 \times 53.20 + 0.55 \times 0.56 = 57.76$

CV dry = 3555 cal/gm

Qdmmf = 3555×100 = 8,727 cal/gm (15,709 BTU/1b)

100 - 1.50 + 57.76

Qmmmf = $\frac{8727 \times 100 - 1.80}{100}$ = 8,570 cal/gm (15,426 BTU/1b)

Vol Matter dry ash free basis =
$$\frac{11.98 \times 100}{100 - 54.01}$$
 = 26.05

Vitrinite mmRo (Esso Research lab) = 1.34

			W:						
B22 - 28 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data (Birtley)	_	2.50	26.40	16.00	55.10	0.78	6005	1/2	1.90
Dry Basis			27.08	16.41	56.51		6159		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 26.40 + 0.55 \times 0.78 = 28.94$

CV dry = 6159 cal/gm

Qdmmf = 6159×100 = 8,983 ca1/gm (16,170 BTU/1b)

100 - 2.50 + 28.94

Qmmmf = $\frac{8983 \times 100 - 1.9}{100}$ = 8,812 cal/gm (15,862 BTU/1b)

Vol Matter dry ash free =
$$\frac{16.41 \times 100}{100 - 27.08} = 22.50$$

DAVE SEAM DH82-1 Chip Sample

WT%										
B46 15-18 m	+ 28 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data (Bir	tley)	-	1.30	46.60	13.20	38.90	0.72	4232	1/2	2.40
Dry Basis				47.21	13.37	39.41		4288		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 46.60 + 0.55 \times 0.72 = 50.72$

CV dry = 4288 cal/gm

Odmmf = $4288 \times 100 = 8,243 \text{ cal/gm} (14,837 \text{ BTU/1b})$

100 - 1.30 + 50.72

Qmmmf = $\frac{8243 \times 100 - 2.40}{100}$ = $\frac{8,045 \text{ cal/gm (14,481 BTU/lb)}}{100}$

Vol Matter dry ash free basis = $\frac{13.37 \times 100}{100 - 47.21}$ = 25.32

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 17.60 + 0.55 \times 0.76 = 19.43$

CV dry = 6375 cal/gm

Qdmmf = 6375×100 = 8,052 cal/gm (14,494 BTU/1b)

100 - 1.40 + 19.43

Qmmmf = $8052 \times 100 - 2.00 = 7,891 \text{ cal/gm } (14,204 \text{ BTU/1b})$

Vol Matter dry ash free = $\frac{17.84 \times 100}{100 - 24.24} = 23.55$

BRENDA SEAM MIDDLE PART DH82-11P1

WT%									
B53 1.4 - 3.36 m	ADM	MOIST	ASH	VOL	F.C.	S	CV Cal/gm	FSI	EqM
Lab Data (Birtley)	5.30	3.70	22.40	24.10	49.80	0.26	5810	0	6.50
Dry Basis			23.26	25.02	51.71		6033		

Rank Calculation using Parr Formula

Mineral Matter = $1.08 \times 22.40 + 0.55 \times 0.26 = 24.33$

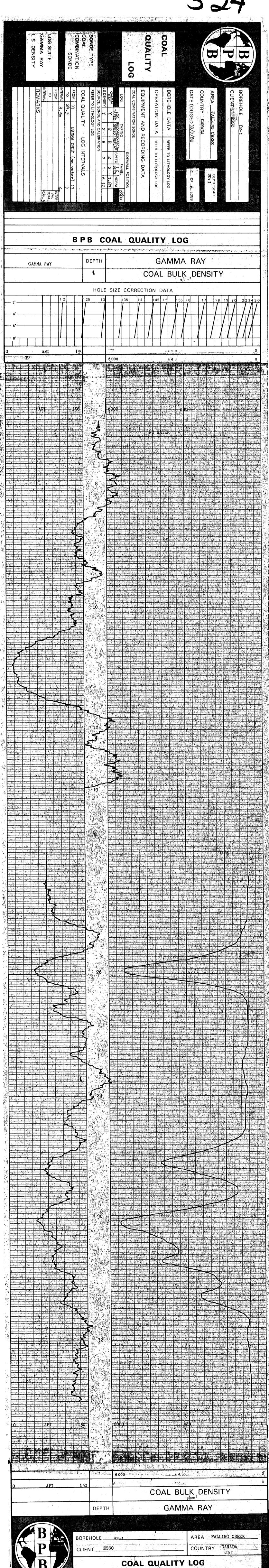
CV dry = 6033 cal/gm

Qdmmf = 6033×100 = 8,383 cal/gm (15,089 BTU/1b)

100 - 3.70 + 24.33

Quantif = $8383 \times 100 - 6.5$ = 7,838 cal/gm (14,108 BTU/1b)

Vol Matter dry ash free basis = $\frac{25.02 \times 100}{100 - 23.26}$ = 32.60



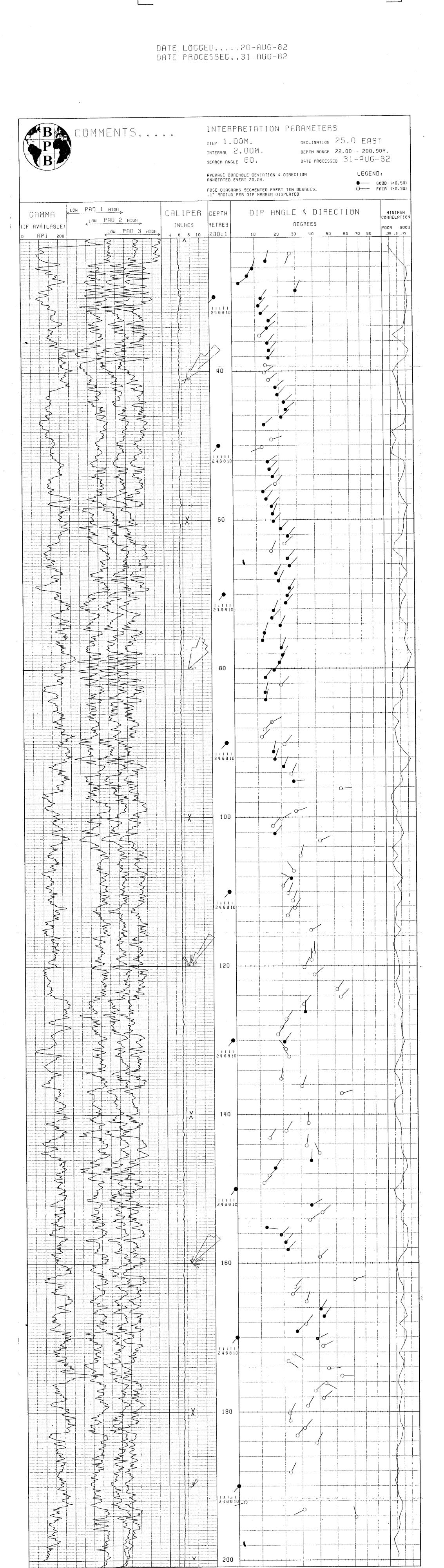
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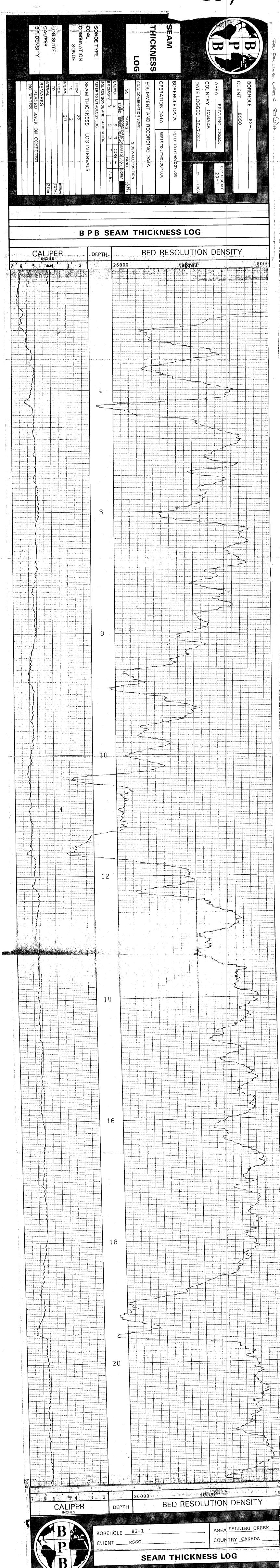
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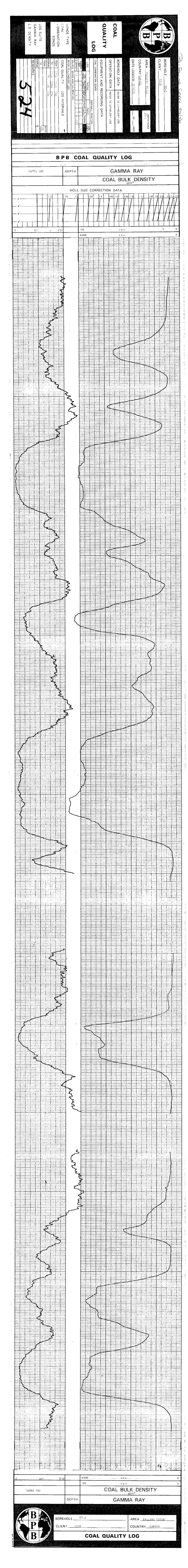
AREA____

CØUNTRY___

ESSO MINERALS 82-1 FALLING CREEK CANADA

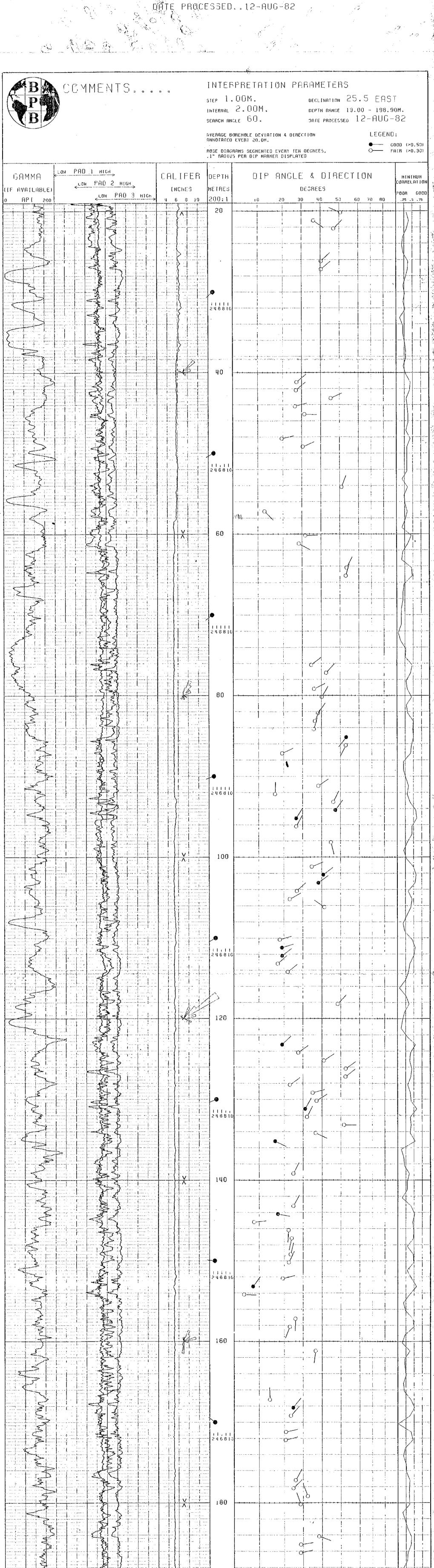






ESSO MINERALS CANADA ING CREEK CANADA

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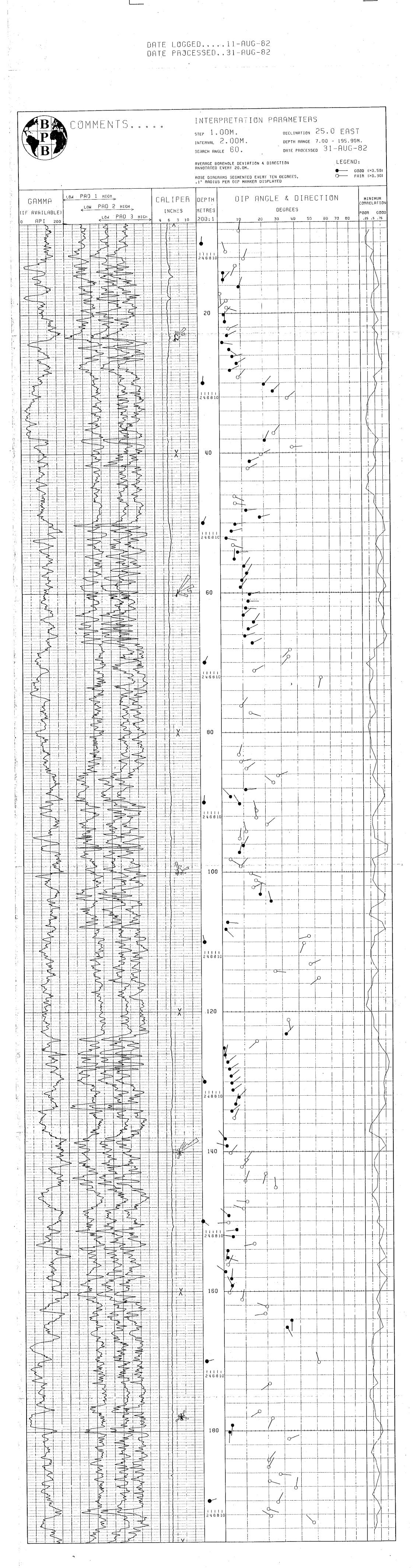
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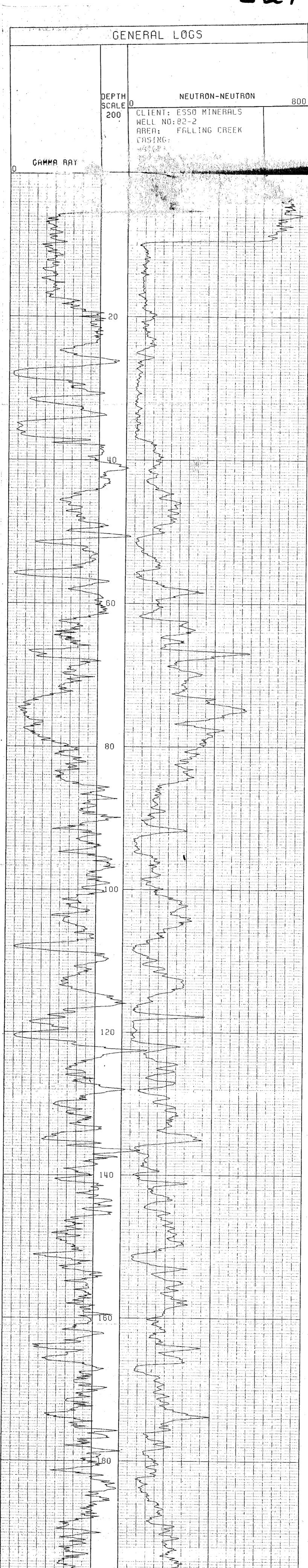
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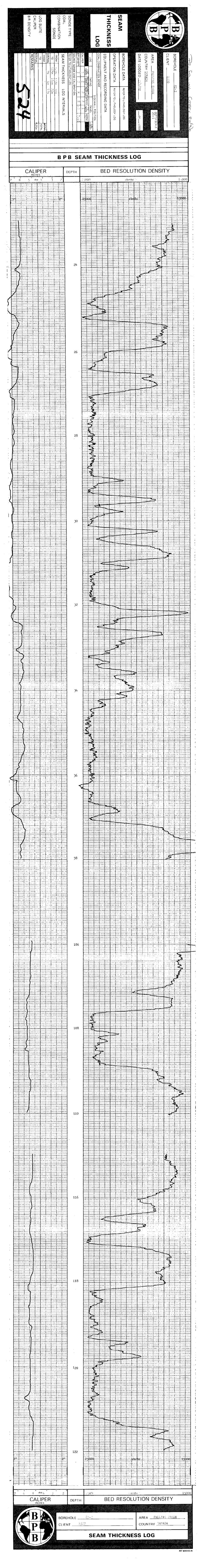
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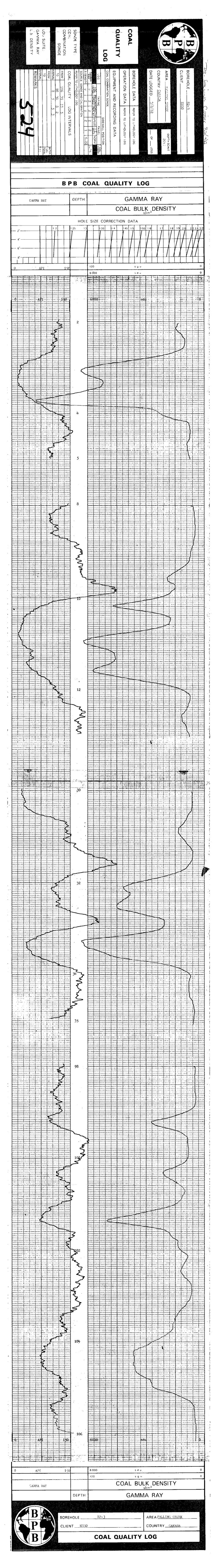
CØUNTRY___

ESSO MINERALS 82-12 FALLING CREEK CANADA

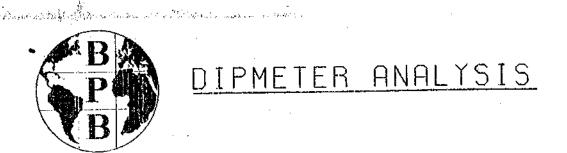






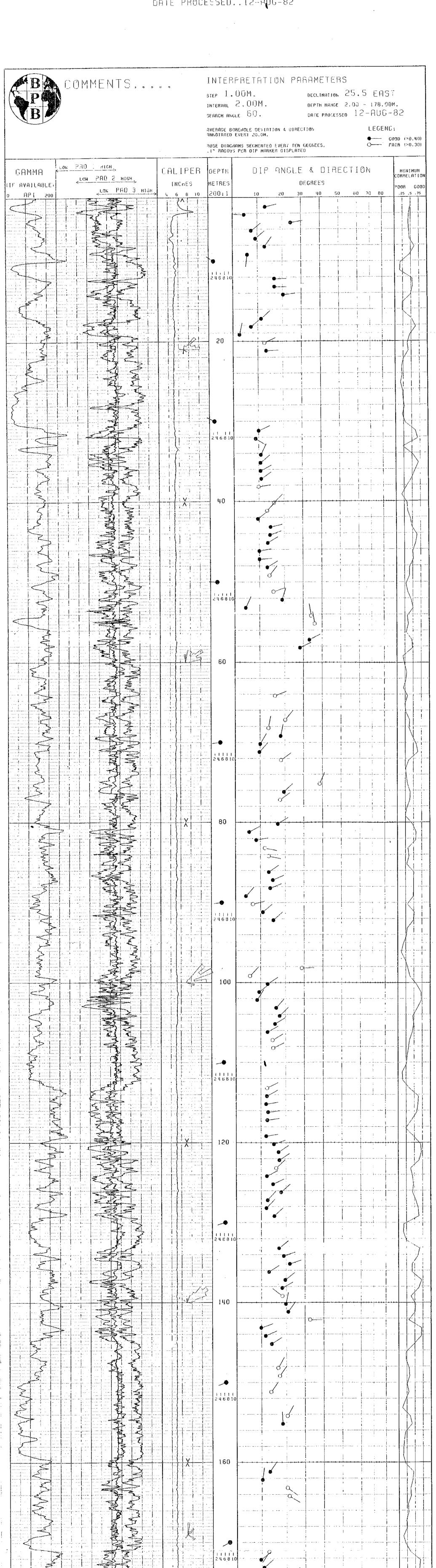


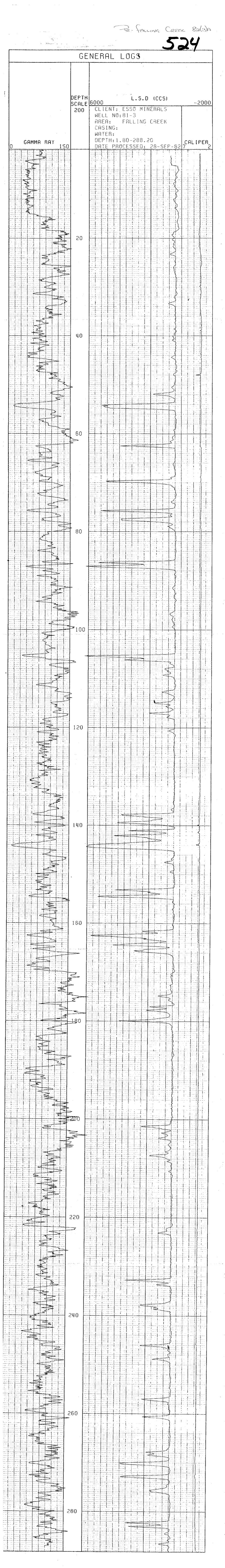
FR-FALLING CREEK 82 (3)A

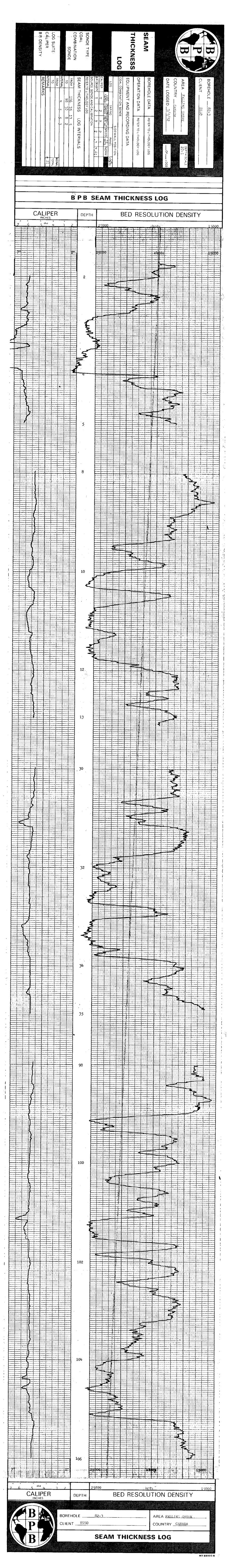


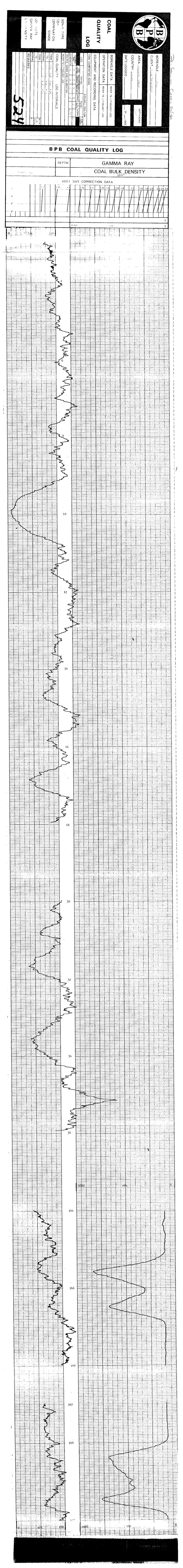
CLIENT____ BOREHOLE_ AREA____ COUNTRY___ ESSO MINERALS CANADA 82-3 FALLING CREEK CANADA

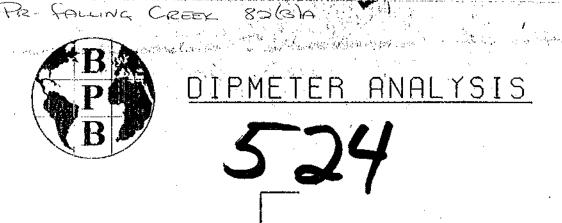
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CLIENT____

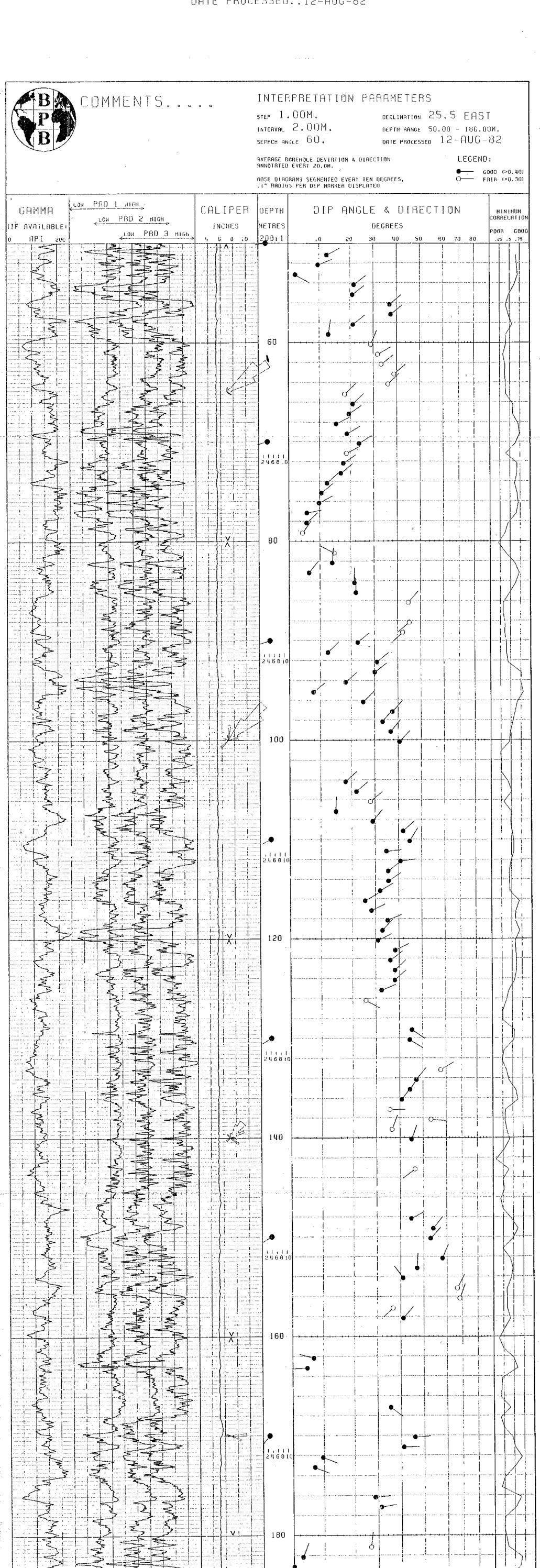
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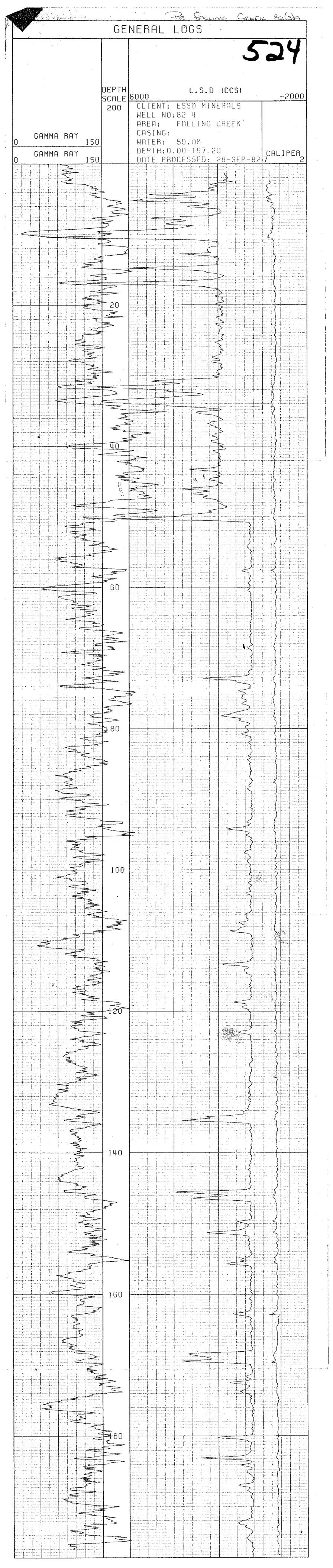
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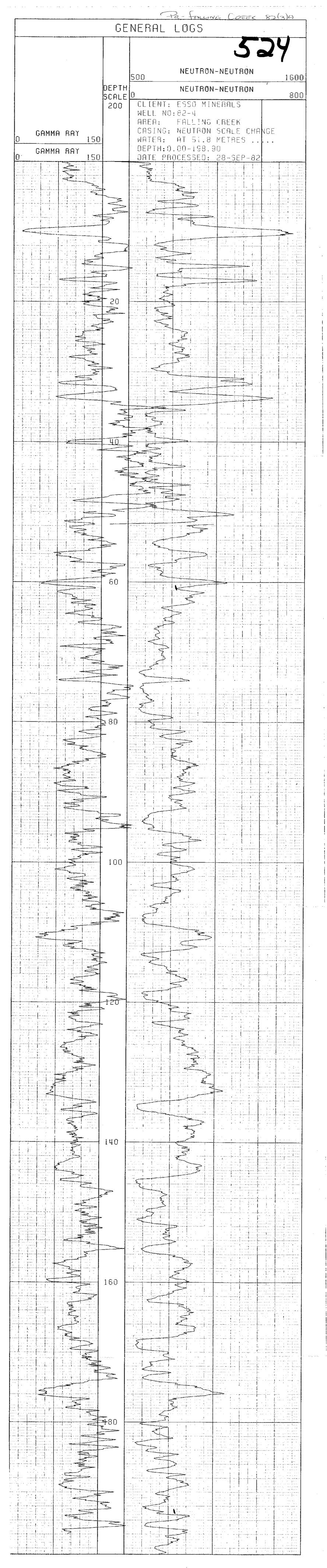
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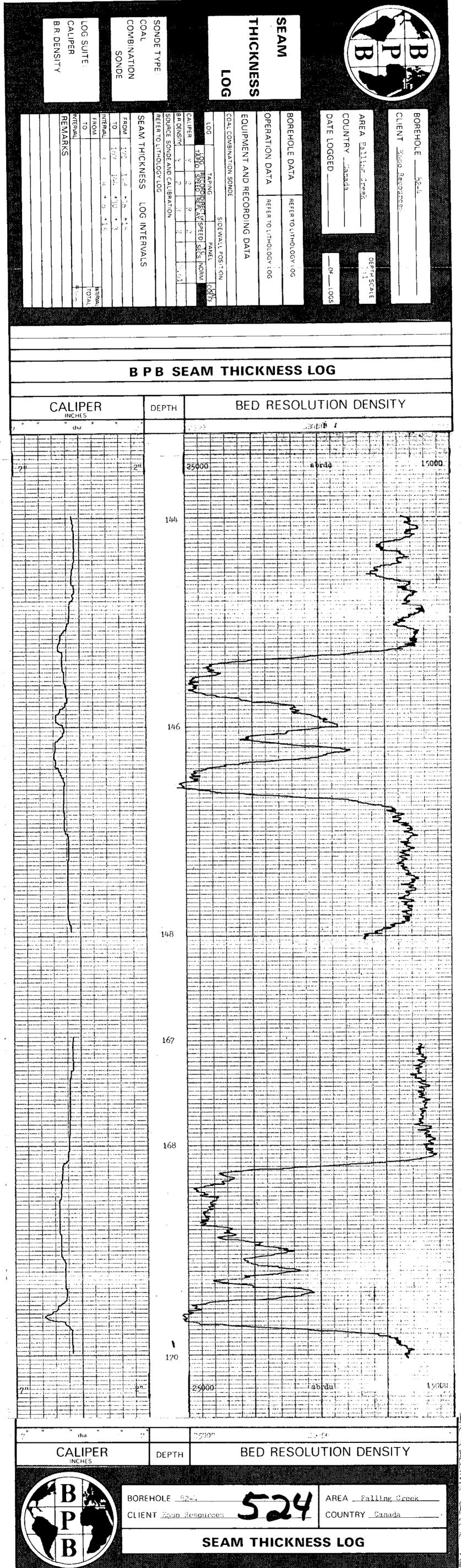
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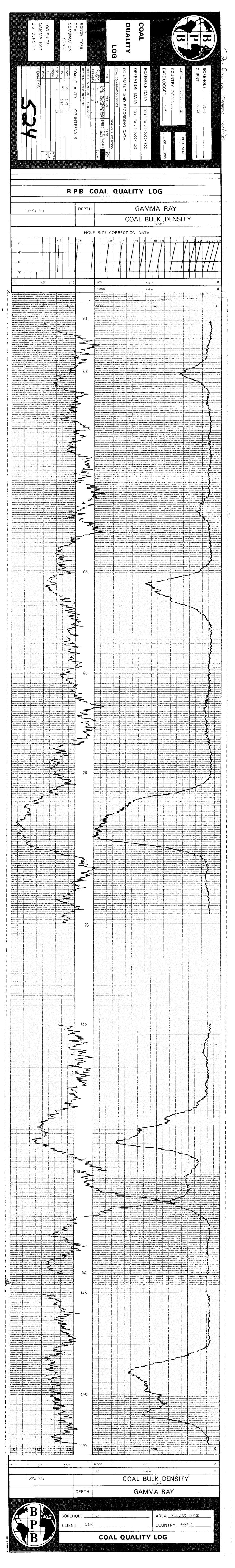
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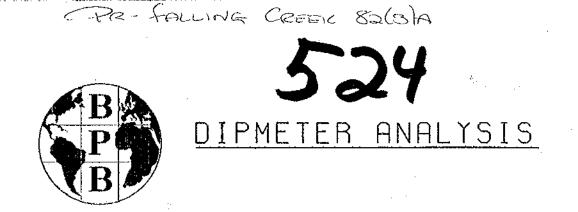












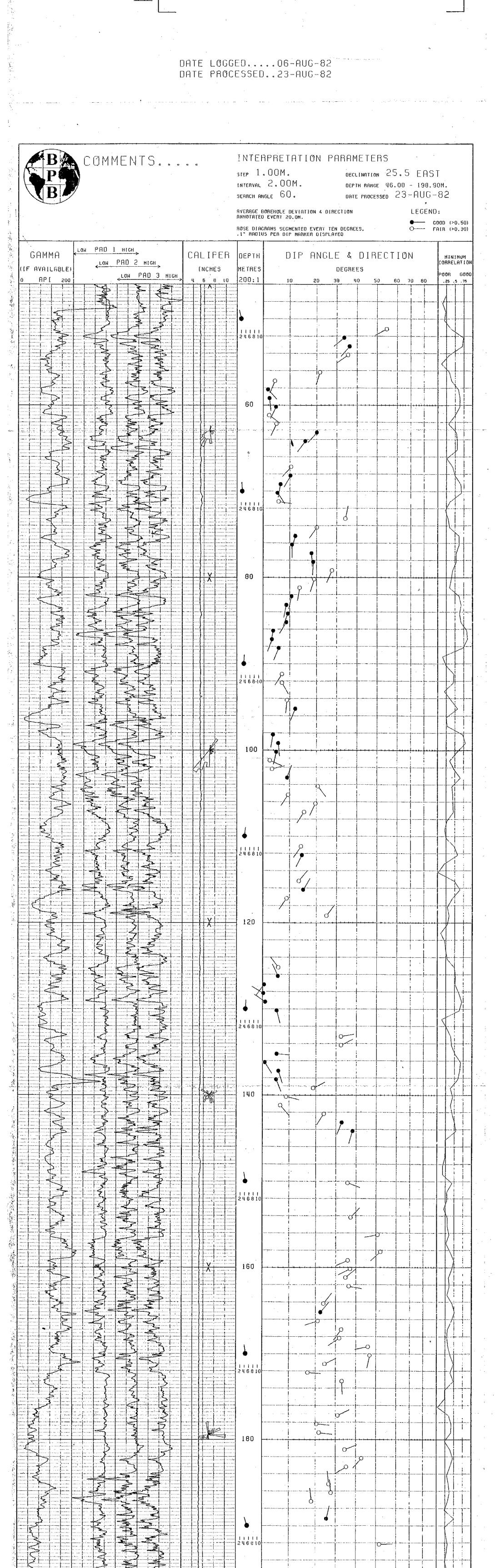
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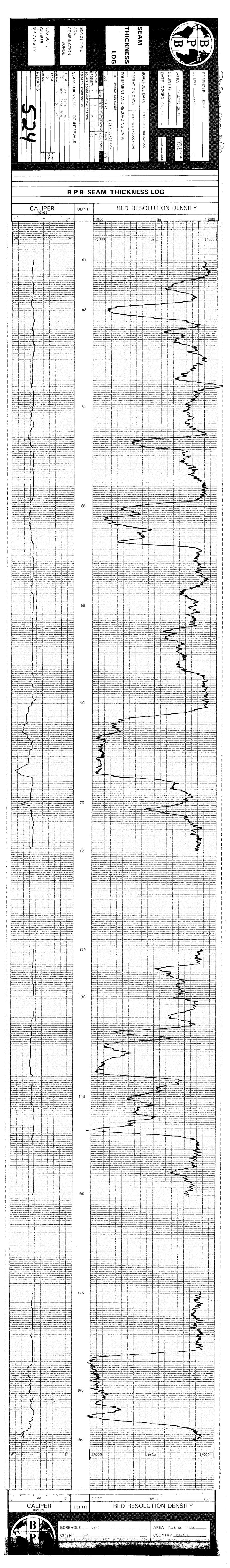
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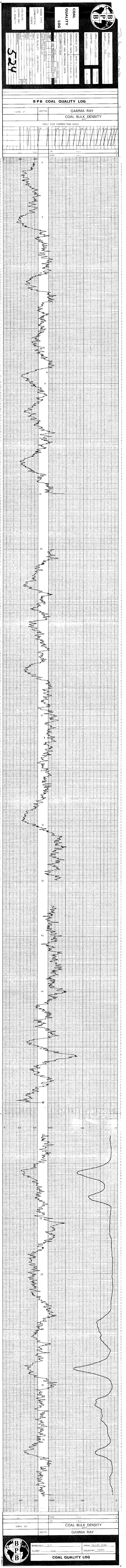
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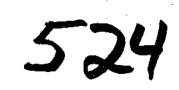
CØUNTRY___

ESSØ MINERALS CANADA 82-5 FALLING CREEK CANADA

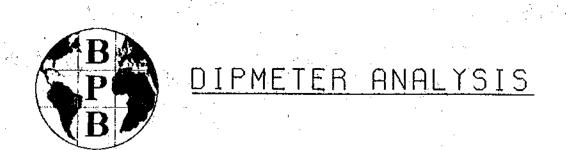








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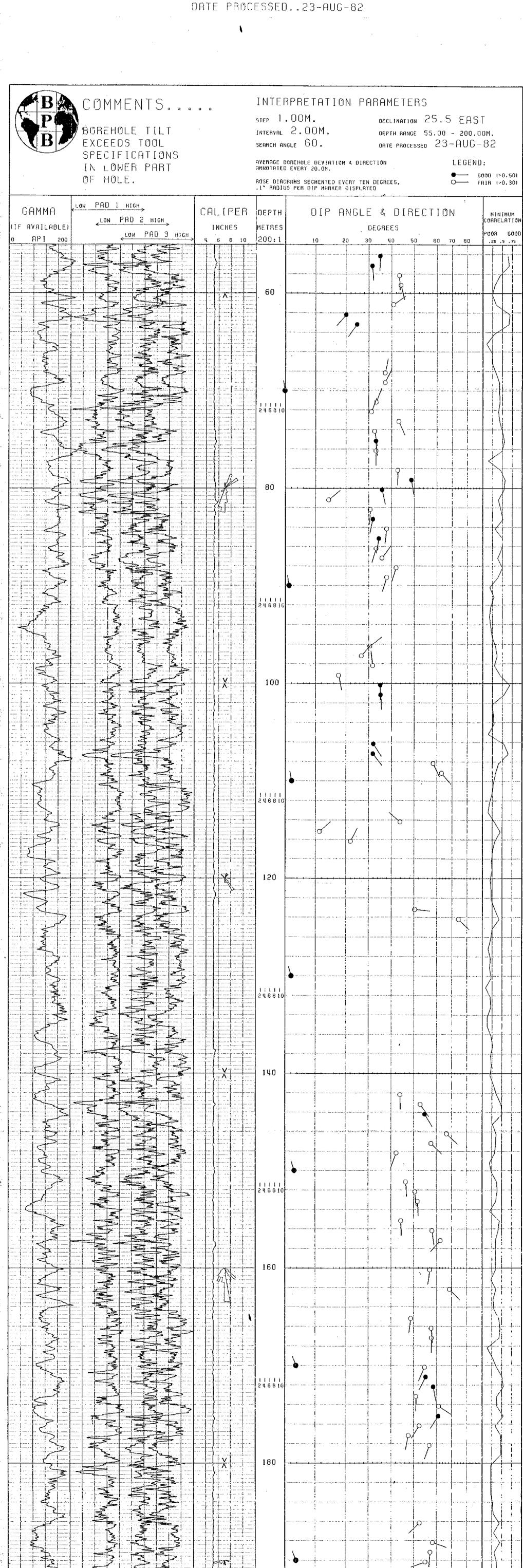


CLIENT. BOREHOLE_ AREA____

COUNTRY_

ESSO MINERALS CANADA 82-6 FALLING CREEK CANADA

DATE LOGGED....08-AUG-82 DATE PROCESSED..23-AUG-82



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