PR-Falling Creek 81 (1)A

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GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 523

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NO SCALE

NO N
NO SCALE

SCALE/N

NO SCALE
NO LATS/LONGS

N North/No scale

No Scale/No N.

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ABSTRACT

The Falling Creek licenses total 15,874 hectares and are located in the Peace River coalfield trend of northeast British Columbia.

The objectives of the 1981 field season were: to upgrade our level of exploration from the reconnaissance carried out in 1980, to improve our evaluation of the properties economic potential, and to recommend programs designed to define a recoverable reserve.

The formations underlying the property are Lower Cretaceous in age. They are the coal measures of the Crassier Group overlain by the marine Moosebar Formation at the base of the Fort St. John Group. The formations contain a wide range of sedimentary rocks including conglomerates, sandstones, siltstones, mudstones, carbonaceous mudstones and coal. Marine mudstones are found in the Moosebar Formation. The facies of the Crassier Group are dominantly fluvial.

The structure is complex and dominated by closely spaced angular northwest trending folds. These are faulted most commonly by high angle reverse faults and less frequently by normal faults.

The coal measures contain many seams of high bituminous rank, some of which may be metallurgical. Speculative coal reserves are substantial but recoverable reserves are expected to be modest. Extensive drilling will be required in order to define any exploitable resource.

1.0 INTRODUCTION

1.1 1981 Field Program Objectives

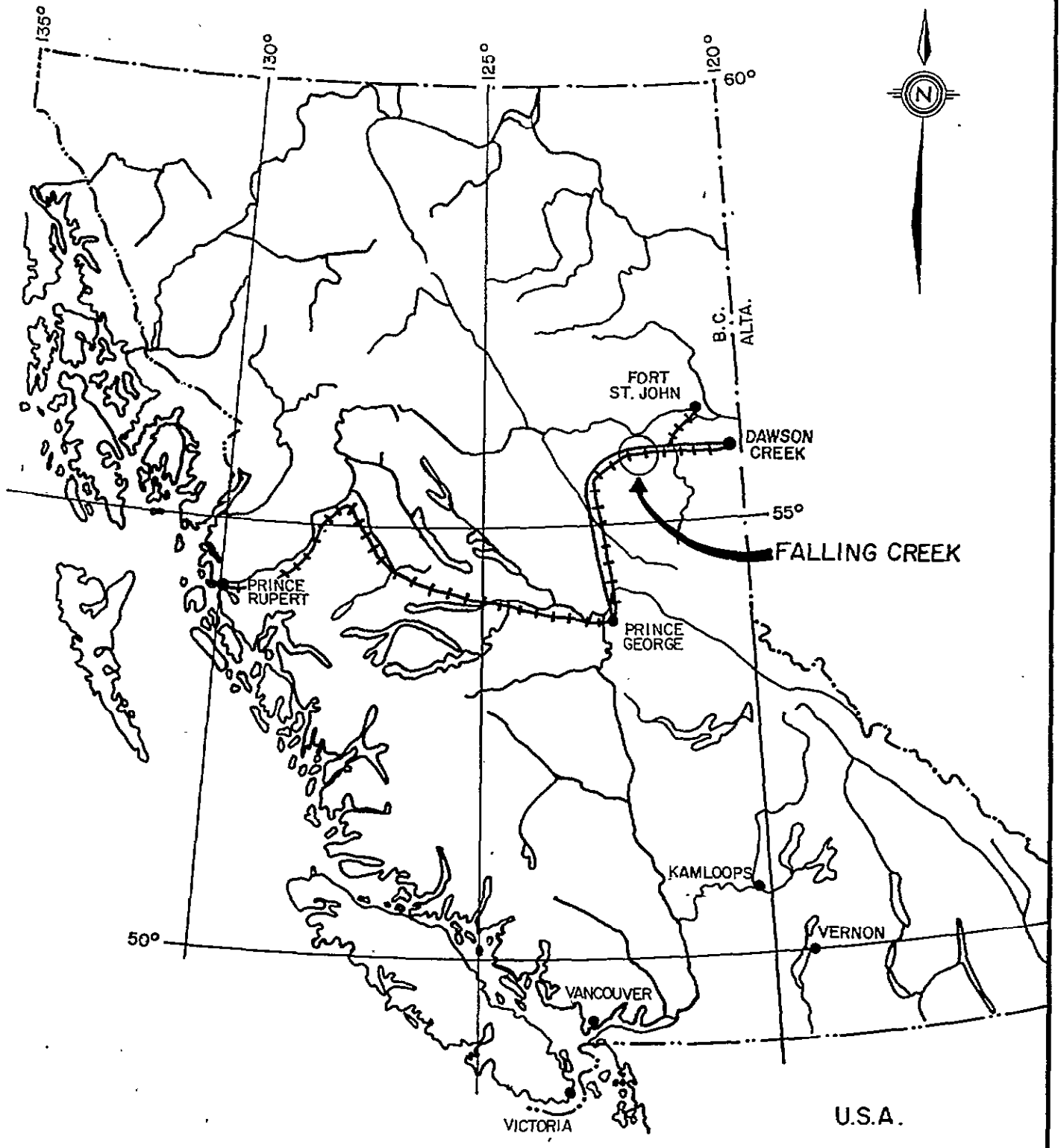
The licenses had been mapped on a reconnaissance basis and recommendations for land status changes and further exploration had been made in 1980. These were based largely on the distribution of coal occurrences.

The geology of the area is very complex and it clearly had to be examined in more detail before the property could be accurately evaluated.

A program was designed which included detailed mapping, mechanical trenching and core drilling. The primary objective was to understand the stratigraphy of the coal measures involved and to arrive at a more detailed understanding of the structure. From this information it was hoped to build a geological model for the entire property which would define the best coal prospects on the licenses and draw on more information than simply coal occurrences.

Though a portion of the property had been defined as a good prospect due to numerous coal showings, these showings may have been a result of the surface activities in the area in the form of forest clearing and road excavation, which are largely absent elsewhere.

A more detailed estimation of the reserves was hoped for, though an accurate assessment was not part of the objectives. This would have been unreasonable given the complexity of the geology and the limited resources available during the 1981 field season.



BCR

HIGHWAY 97

SCALE

0 100 200 300 400 500 kilometres

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

LOCATION MAP

Figure 1

FEB.1982

93 O-8

1.2 Location and Access

The Falling Creek licenses occur within the north east British Columbia coal fields trend, and lie within the Peace River Land District.

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.

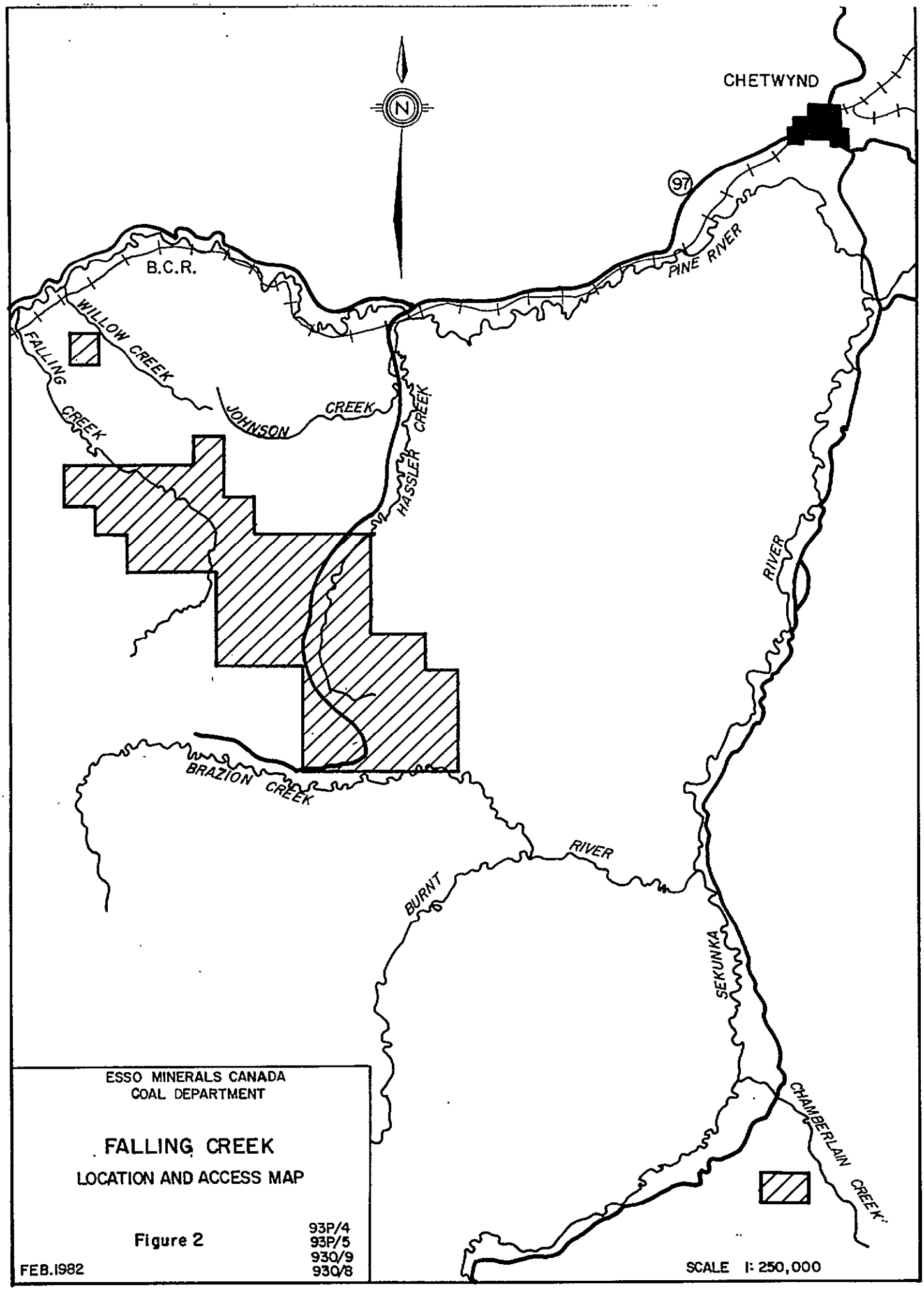
One license known as Willow Creek is within NTS unit 93 0/9 at 55° 35' N Latitude, 122° 15' W Longitude.

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 15874 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 18-32.

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



ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

LOCATION AND ACCESS MAP

Figure 2

93P/4
93P/5
93O/9
93O/8

FEB.1982

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 of the Rocky Mountains. 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 tree line.

1.4 Previous Work

Esso Resources Canada Ltd. acquired the Falling Creek licenses (Table 3) in May 1980. During the summer of 1980, geological mapping and one rotary drill hole were completed. At the end of 1980, five licenses were dropped.

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 determine estimates of mineable coal 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 now located on the Falling Creek property. The stratigraphic section was

thought to be the lower Gething Formation. The licenses were dropped by Pan Ocean and subsequently acquired and dropped again by Manalta. Esso Resources then acquired the property in May 1980.

1.5 Work Completed by EMC in 1981

Detailed geological mapping was carried out on a scale of 1:10,000. Creeks, road cuts and ridges provided the best exposures. Outcrops were located by the use of hip chains, compasses, altimeters, topographic maps and air photographs. Almost no information could be gathered from the northern licenses around Falling Creek due to the lack of outcrop. All the data was stored in a computer file and the bedding attitudes and location coordinates were used in the drawing of cross-sections using computer programs developed at the University of Alberta. (DR CHARLESWORTH)

Three trenches were dug by backhoe in the southern portion of the property, near drill hole locations, to determine the extent of the coal seams in this area.

Three diamond drill holes were completed between Sept. 1 and Sept. 22 1981. The drill holes were numbered 81-1, 81-2 and 81-3. The core size was HQ. A suite of geophysical logs was run on every hole which included natural gamma, bulk density, caliper, neutron and deviation records. A dipmeter was run on drill holes 81-1 and 81-3. Several attempts were made to run a dipmeter on 81-2 but after the tool was stuck briefly the attempt was abandoned.

Coal samples were recovered from coring and by channel sampling of surface outcrops. The samples were sent to Birtley Coal and Minerals Testing of Calgary for analysis.

All crews were lodged in motels in Chetwynd. Access to the property for drilling and trenching was by pick-up using the John Hart highway, the Canfor Hasler Creek logging road and minor tributaries thereof. The drill (Super 38) was brought in on a low boy and skidded into position with a D6 Caterpillar tractor. All drill moves and site preparation was carried out with the D6. Water haulage was from local creeks using a four wheel drive water truck. Field mapping was carried out on foot and the more remote regions were accessed by helicopter. The program made use of existing logging roads and trails and no new roads were cut.

TABLE 1

List of Work Completed 1981

License	Geological Mapping		Topographic Mapping	Drilling	Trenching
	Detailed	Reconnaissance	Completed 1980		
6370	x		x		
1	x		x		
2	x		x		
3	x		x		
4	x		x		
5	x		x		
6	x		x		
7	x		x		
8	x		x		
9	x		x		
80	x		x		
1	x		x		
2	x		x		
3	x		x		
4	x		x		
5	x		x		
6	x		x		
7	x		x		
8	x		x		
9	x		x		
90	x		x		
1	x		x		
3	x		x		
4	x		x		
5	x		x		
6	x		x	x	x
7	x		x		x
8	x		x	x	x
9	x		x		
6400		x			
1		x			
2	x		x		
3	x		x		
4	x		x		
5	x		x		
6	x		x		
7	x		x		
8	x		x		
9	x		x		
10	x		x		

TABLE 1 (Continued)

List of Work Completed 1981

License	Geological Mapping		Topographic Mapping	Drilling	Trenching
	Detailed	Reconnaissance	Completed 1980		
6411	x		x		
2	x		x		
7	x		x	x	
8	x		x		
9	x		x		
20	x		x		
1	x		x		
2	x		x		
3	x		x		
4	x		x		
5	x		x		
6	x		x		
7	x		x		
8	x		x		

TABLE 2

DRILL HOLES & TRENCHES COMPLETED 1981

DRILL HOLE NO.	LOCATION UTM	ELEVATION METERS	DEPTH METERS	SIZE CORE	GEOPHYSICAL LOGS	ORIENTATION
81-1	59410 E 44010 N	1220	282.55	HQ	COAL COMBINATION SONDE (CCS) NEUTRON - NEUTRON DIP METER	VERTICAL
81-2	60605 E 42122 N	1185	340.46	HQ	CCS, NEUTRON-NEUTRON	VERTICAL
81-3	62046 E 40513 N	1183	291.80	HQ	CCS, NEUTRON-NEUTRON DIP METER	VERTICAL

TRENCH NO.	LOCATION	ELEVATION METERS AT BEGINNING	LENGTH METERS
1.	BEGINNING: 59245 E 43840 N END: 59660 E 44225 N	1240	636.2
2.	BEGINNING: 60400 E 41910 N END: 60775 E 42175 N	1220	472.2
3.	BEGINNING: 60260 E 44865 N END: 60415 E 44660 N	1100	1166.0 DISCONTIN- UOUSLY TRENCHED

Total meters drilled: 914.81 m

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.

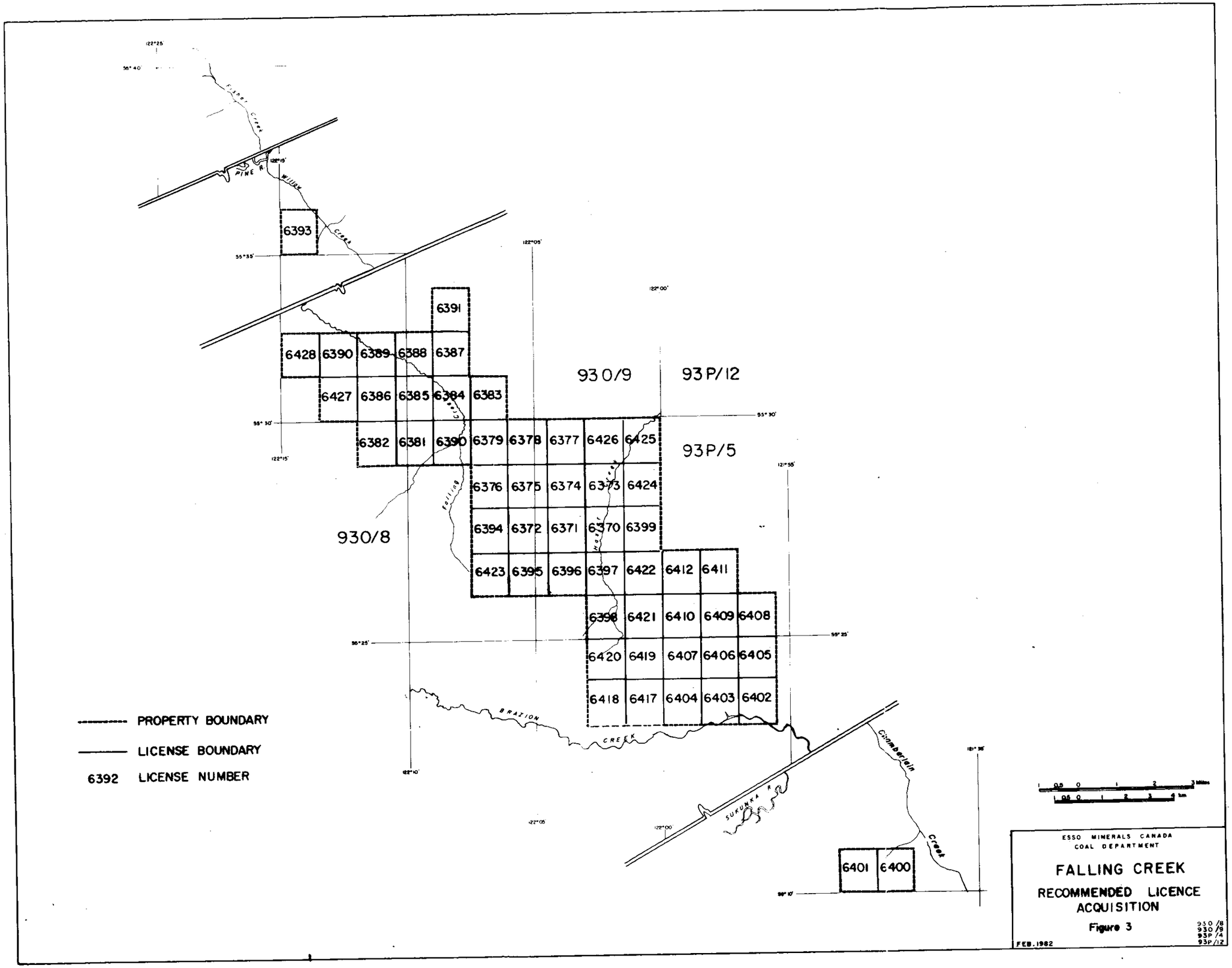
License Number	Description	Hectares
	MAP 93 0/8	
6370	Block I, Units 43, 44, 53, 54	294
6371	Units 45, 46, 55, 56	294
6372	Units 47, 48, 57, 58	294
6373	Units 63, 64, 73, 74	294
6374	Units 65, 66, 75, 76	294
6375	Units 67, 68, 77, 78	294
6376	Units 69, 70, 79, 80	294
6377	Units 85, 86, 95, 96	294
6378	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 O/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 O/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	294
6428	Units 29, 30, 39, 40	294
	TOTAL	15,874



Fisher Creek
PINE R.
Willow Creek
6393
6391
6428
6390
6389
6388
6387
6427
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6384
6383
6382
6381
6390
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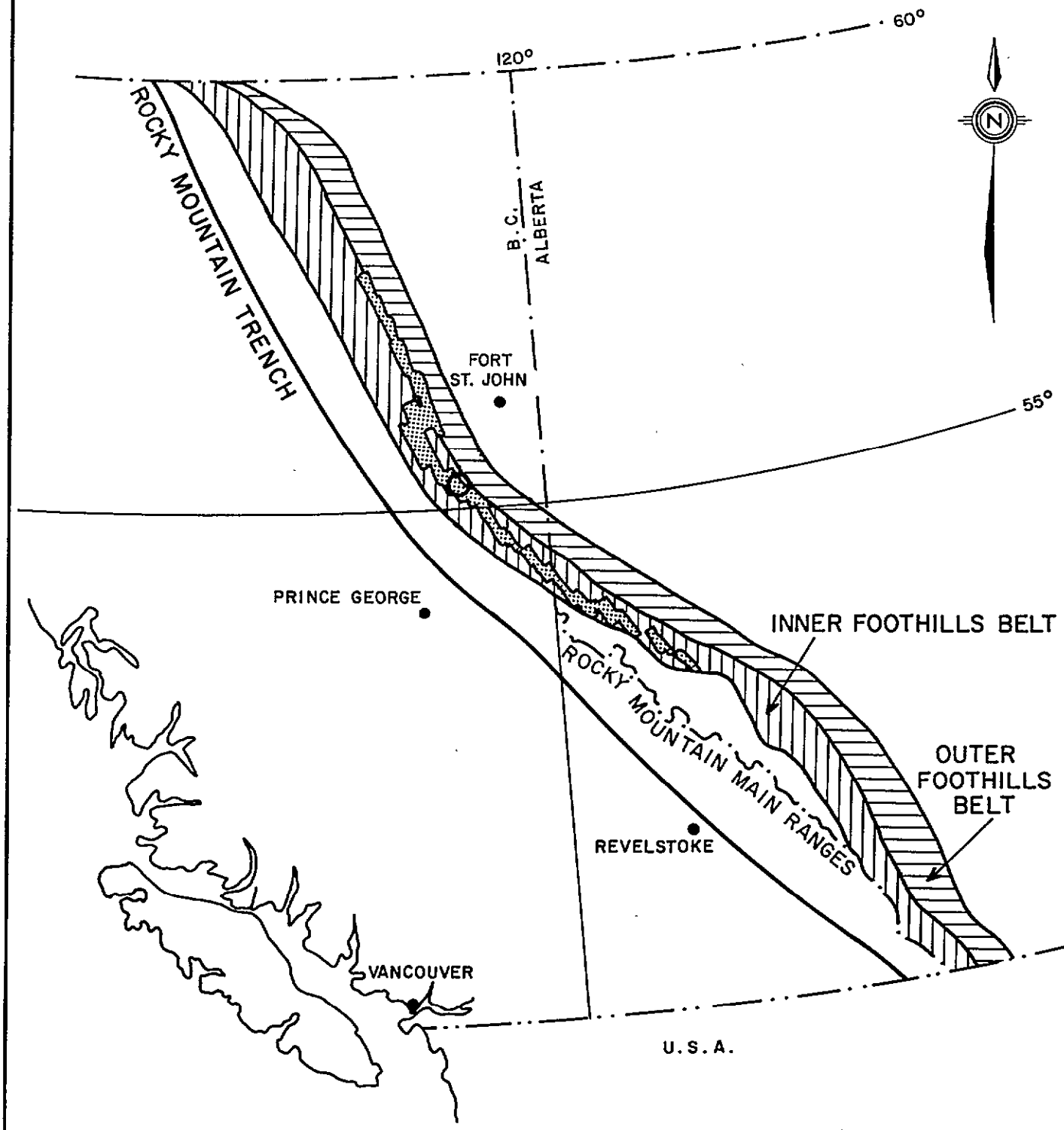
6409
6408
6420
6419
6407
6406
6405
6418
6417
6404
6403
6402
6401
6400
93O/9
93P/12
93P/5
930/8
Falling Creek
BRAZION CREEK
SUKUNKA R.
Chamberlain Creek
PROPERTY BOUNDARY
LICENSE BOUNDARY
6392 LICENSE NUMBER
ESSO MINERALS CANADA
COAL DEPARTMENT
FALLING CREEK
RECOMMENDED LICENCE ACQUISITION
Figure 3
FEB. 1982



SCALE

0 100 200 300 400 500

KILOMETRES

LEGEND

COAL BEARING CRETACEOUS SEDIMENTS

LICENCE AREA

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

REGIONAL GEOLOGY

Figure 4

FEB.1982.

93 O-8

2.0 REGIONAL GEOLOGY

The Falling Creek property is situated within the Rocky Mountain inner foothills belt (Figure 4). In this region thick successions of marine and continental sediments interfinger along the western margin of the Western Canadian Sedimentary Basin. The sediments are Middle Triassic to Upper Cretaceous in age. Deformation of these sediments during the Laramide Orogeny resulted in the formation of northwest-southeast trending fold and thrust belts.

The Northeast British Columbia coal fields are underlain by the Lower Cretaceous Fort St. John and Crassier or Bullhead Groups. These groups have been described in both regional and localized stratigraphic studies by Stott (1968, 1971, 1973), Hughes (1964, 1967), McKechnie (1955) and others.

The Crassier Group is mainly comprised of continental sandstones, siltstones and mudstones which may be described as the coal measures. The Group may also contain local marine horizons. The Fort St. John Group comprises marine mudstones in the lower two thirds and alternating marine and continental sediments in the upper one third.

Some questions still exist about the correct subdivision of the Crassier and Bullhead Groups. So far in our exploration we have found the definitions of Hughes (1964) to be the most useful (see Table 4).

PLATE 1: Outcrop H037

Thin bedding in cyclic sequences

PLATE 2: Outcrop H013

Hand trench through mudstone and coal of the recessive part of the unit. Resistant sandstones outcrop above.

3.0 PROPERTY GEOLOGY

3.1 ROCK TYPES

3.1.1 Field Observations

All the rocks examined on the property are sedimentary. They include the following lithotypes: coal, carbonaceous mudstone, mudstone, siltstone, sandstone, grits and conglomerates.

These rock types are found in alternating sequences which are usually cyclic (Plates 1 and 2). The different lithologies may grade into each other or contact sharply and on occasion, they may be partly erosional (Plate 3). A normal cycle might consist of the following from bottom to top:

Sandstone
Siltstone
Mudstone
Carbonaceous Mudstone
Coal
Mudstone
Sandstone or Siltstone

This example could be considered complete with a full range of lithologies and an organic phase represented by coal. More frequently the cycles are less complete, containing alternating beds of only two or three different lithologies. Such cycles in coal measures are commonly called cyclothems and are usually measured from the base of one sandstone to the base of the next.

Sandstones form the most abundant outcrop. Mudstones and coal form the recessive parts of the cycles and are commonly covered. (Plate 2)

PLATE 3: Outcrop H022A

Uneven contact. Conglomerate overlying mudstone. Lower Gething Formation

PLATE 4: Outcrop B002

Sandstone directly overlying coal (trench)

PLATE 5: Outcrop B146

Large cross-bedded sandstone unit. Dresser Formation?

PLATE 6: Outcrop J128

Weathered coal exposure

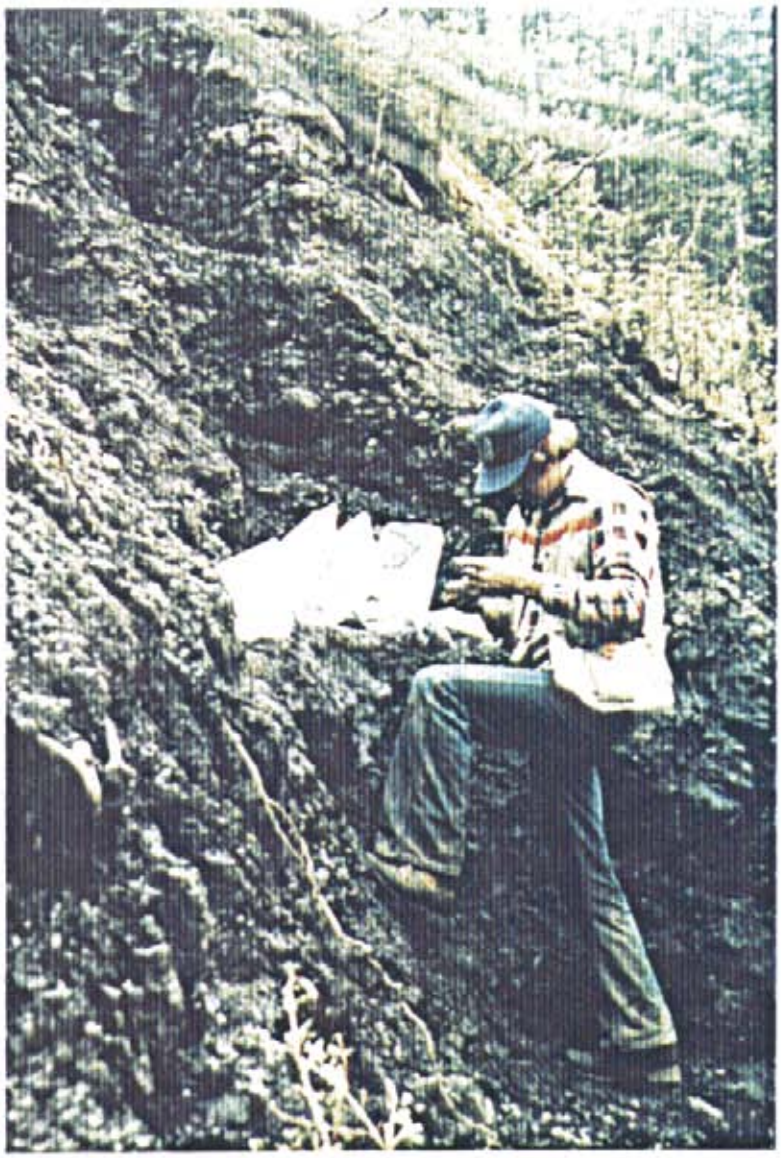


PLATE 7: Outcrop R054

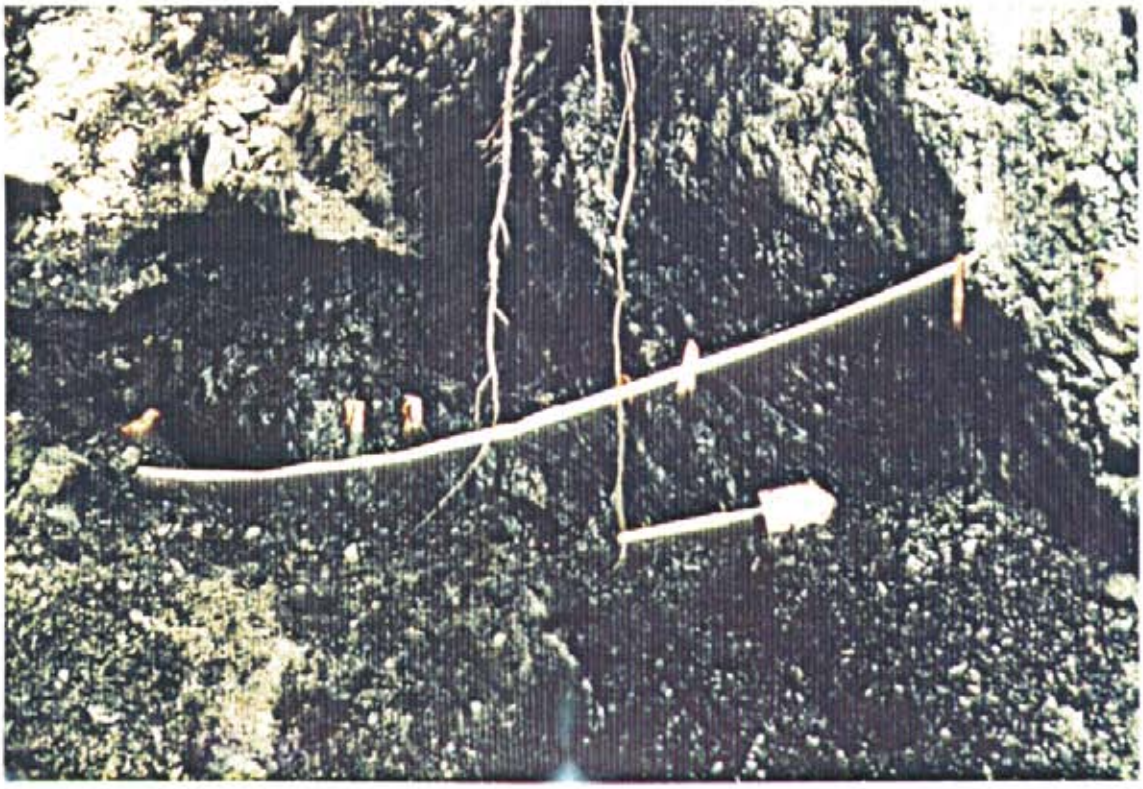


PLATE 8: Outcrop H018

Tree root system
Roots developed into mudstone. Stump buried in sandstone, overbank deposit.

PLATE 9: H022B

Pebble horizon in sandstone

The thickness of members within the cyclic units and the units themselves may vary greatly (compare Plates 1 and 4). Very thick sandstone units occur (Plate 5) over 20m thick. Elsewhere, thick mudstone units can be found but are commonly not more than 10m thick.

Coal

The coal outcrops are, without exception, deeply weathered to a depth greater than practical hand trenching (Plates 6 & 7). Even backhoe trenches did not uncover fresh coal. The coal consists of bright to dull coal with some banded bright and dull. It is carbon black in colour. Roof material is usually mudstone though seams may be overlain directly by sandstone (Plate 4). Floor material is usually mudstone, silty mudstone or siltstone, with abundant rootlet impressions.

The partings are normally shaley carbonaceous mudstone. Partings which consist of clear quartz grains in a matrix of pale grey clays are quite common. Some of these were soft and plastic when wet and friable when dry while others can only be broken with powerful hammer blows.

Mudstones

The mudstones are carbonaceous and very dark grey or noncarbonaceous and medium grey to grey-brown or in some cases, shades of brown. They have a blocky or sometimes splintery fracture and can also be shaley. With only rare exceptions they contain small plant fragments of stems and leaves. Iron concretions are common and present in layers or occasionally as isolated nodules.

Siltstones

The siltstones are massive, blocky or slightly shaley. In colour they are medium grey or stained light brown to tan. They may show very faint laminations. They are completely gradational into the grain sizes above and below. They may contain an abundance of plant fragments, leaves, stems and fronds, all finely preserved.

Sandstones

The sandstones are variable. Some are very fine grained and finely laminated usually medium grey or stained light brown to tan. These are usually thin to medium bedded (Plate 8). Some are fine grained, very dirty, slightly carbonaceous, poorly laminated and medium or thick bedded. These are medium grey to medium dark grey. Others are medium or medium to coarse grained and have a salt and pepper appearance in texture and colour. They are usually medium or thick bedded. These are laminated and crossbedded and may show slump structures. They are also generally cleaner than the finer sandstones. They may contain chert pebbles dispersed, concentrated on the base of sets or in fairly continuous lenses and beds. They may also interfinger and interbed with sandy chert conglomerates (Plates 9, 10 & 12). On weathered surfaces, they may look flaggy and have a faint purple staining (Plate 13). Large plant casts of roots and trunks are common and they are commonly coalified and found at the base of sets. These sandstones are characteristically hard to very hard and the quartz grains show intergrowth and silica cementing.

Grits and Conglomerates

Grits are developed as medium and coarse sandstones containing granule-sized chert clasts. They are best developed on the northwest side of the property in the Le Hudette Creek section.

Conglomerates are typically granule to pebble size clasts in a sandy matrix and in rare instances, having no matrix, actually display cavities between clasts. The clasts are chert, dark grey, banded and pale grey in colour and quartzite, usually pale grey. They are found in close association with massive, medium to coarse sandstones (described above) and characteristically weather to give a very clean-looking pale grey surface (Plate 11). Where good exposures occur, the conglomerates are shown to be very lenticular and rather irregularly continuous at variable horizons. Together with sandstones, they may form massive crossbedded units up to 20m in thickness (Plate 10). The cement is usually entirely silica. Unusual crenulated surfaces occur within the rock and on exposed surfaces and appear to be dissolution structures. The rock will naturally break along these surfaces.

Some outcrops of almost pure conglomerate do occur, usually being less than 10m thick. These appear to have poor lateral continuity and can be demonstrated, in a few places, to pass laterally into coarse sandstone.

The sandstones and conglomerates form the best and most frequent outcrops, thus they naturally attract the most attention.

PLATE 10: Outcrop D218

Conglomerate sandstone unit

PLATE 11: Outcrop D218

Close-up of conglomerate horizon

PLATE 12: Outcrop D004

Conglomerate lensing in sandstone unit. Dresser formation

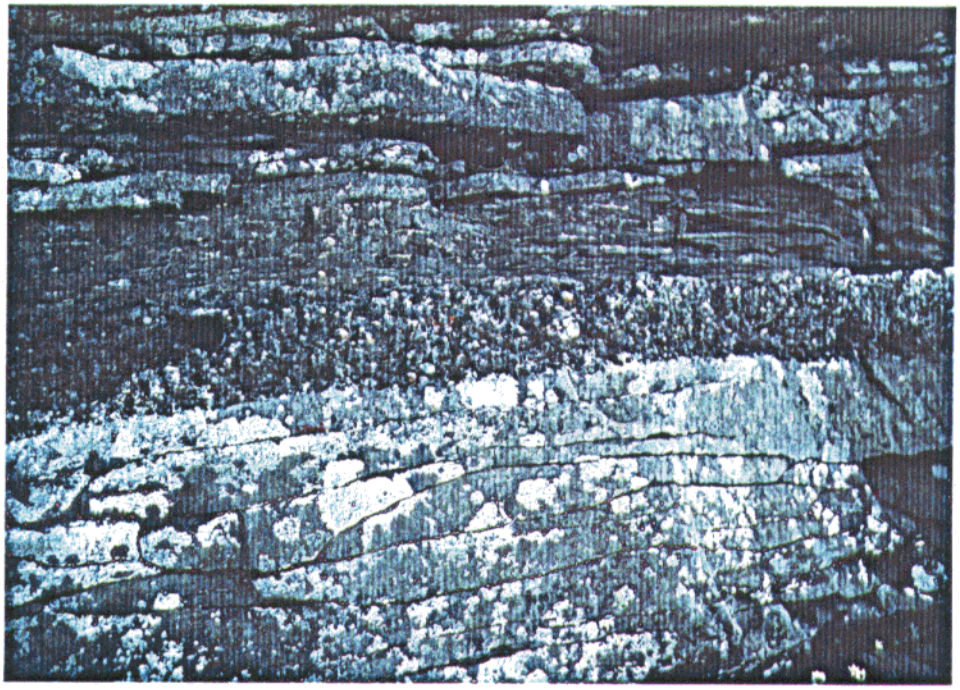


PLATE 13: Outcrop D236

Conglomeratic sandstone facies. Dresser formation

3.1.2 Drill Hole Observations

(See Plates 31, 32 & 33)

Good core recovery was obtained from three drill holes, each to approximately 300 m. Recovery, however, was very poor from most coal seams, particularly the thicker seams.

Hole 81-1

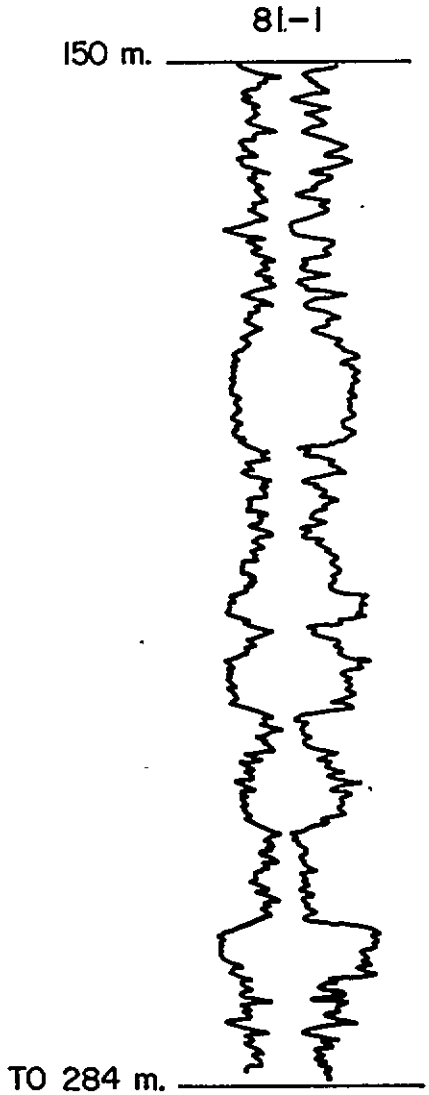
The lithologies encountered in this hole are dominated by sandstones. Coal occurrences are in thin widely spaced seams developing in every 20-30 m, or less, of section. Towards the base of the hole coal seams are less frequent. One seam is over 2 m thick, the rest are usually less than 50 cm.

Sandstone units of 5 and 10 m, or more, are common. They are separated by interbedded siltstone, sandstone and mudstone with occasional carbonaceous mudstone and coal. The individual members of these interbedded units are 2 m thick, or less.

The finer lithologies are occasionally bioturbated and often contain rootlets. Sandstones and siltstones are well-laminated except the most massive coarser units. Conglomeratic sandstones and a conglomerate occur towards the bottom of the hole.

All the field observations are well supported in the core, except, of course, the weathering and fracturing characteristics.

The coal is bright, banded, and dominantly dull lustrous. In the thickest seam (the Contact Seam), it formed hard, brittle, stick core. Over 80% recovery was achieved for this seam.



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COAL DEPARTMENT

FALLING CREEK

LOG RESPONSE
IN THE DRESSER FORMATION
DRILL HOLE 81-1

Figure 9

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930-8

Coarser lithological units are seen to fine upwards, and have a rather pear-shaped geophysical log trace (see Figure 5). The coarsest conglomerates and conglomeratic sandstones have a more blocky trace and are seen to have rather sharp upper and lower contacts (Figure 9).

Drill Hole 81-2

The most noticeable feature of this drill hole is the increased occurrence of coal and the absence of thick (5 m+) sandstone units.

Coal occurs in zones which are separated by sandstone dominated, barren, interbedded units.

There are three seams over 3 m thick, while 5 others are between 1 and 3 m thick. Coal recovery was very poor. (See seam thickness log 81-2).

No conglomeratic sandstone or conglomerates occur in this core.

Drill Hole 81-3

Most of the cyclic units in this hole contain an organic phase either as coal or carbonaceous mudstone. The clean coarse sandstones are less common than in the other two drillholes, as evidenced by a consistently higher gamma response in this hole.

The thickest coal seams both contain numerous carbonaceous mudstone partings. The upper coal seam is 7.27 m thick and the lower, 4.56 m thick. The recovery over these seams was very poor and may be a result of the presence of partings. Four more coal seams over 1 m thick are present.

TABLE 4

LOCAL STRATIGRAPHY FALLING CREEK

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

3.2 STRATIGRAPHY

3.2.1 Introduction

The local stratigraphy is summarized in the Stratigraphic Table 4. It can be demonstrated that all the outcrops seen on the property and all the rocks intersected by drilling by Esso to date, belong to the Crassier Group of Hughes (1964). There may be two exceptions to this in the case of mudstone outcrops; one from Beaver Creek (L080) in the north of the property, and the other on Phillip Creek (B139) in the north east, both of which might belong to the Moosebar Formation (Figure 32).

Off the property to the west, in the ridge of high ground containing Mt. Le Hudette, good exposures of the Montieth and Beattie Peaks Formations occur where they are exposed in the core of the Bickford Anticline.

The creeks leading onto the property from this ridge cut sections exposing Monach quartzites and their contact with the base of the Crassier Group.

Falls Mountain, to the north east, is made up of the Gates Member of the Commotion Formation capping recessive Moosebar mudstones. The Hasler Creek road, eastwards from the property, has good exposures of the Hasler Formation above the Commotion.

It is fairly certain that none of these above mentioned formations have so far been identified on the property itself, (with the two exceptions mentioned above).

Subdivision of the Crassier Group is difficult and under discussion. Limited outcrops and complicated structures confuse the picture.

PLATE 14: Hudette Creek
Looking north west.
Brenot/Dresser Formation contact.
Brenot wooded, Dresser bald
and exposed. Ridge on horizon
is the west limb of the Bickford
Anticline and contains Montieth
& Beattie Peaks Formations.
Faulted core of anticline
seen in marked change of slope.

PLATE 15: Hudette Creek
Resistant sandstone ribs of
Dresser Formation.

It is not the purpose of this report to debate the nomenclature or define the various members. The amount of information available from this property, though restricted, does allow comparisons to existing descriptions and these will naturally be suggested.

Broadly, the whole Group can be considered as coal measures. Coal is reported from all parts of this section.

To complicate the situation on the Falling Creek licenses, good traceable formation contacts are scarce or non-existent on the property itself and the reliability of mappable marker horizons is suspect. In addition, outcrops over much of the property, particularly in the north, are rare.

3.2.2 Descriptions of Formations

Monach Formation

The only clear contact is at the base of the Crassier Group, exposed in the Le Hudette Creek section. Here large ribs of white quartzite 3 to 5 m thick outcrop, and are interbedded with 5 to 10 m thick units of fine to medium sandstones which are much dirtier in relation to the quartzites. The quartzite ribs are quite outstanding in aerial views from helicopter and photography. The beds at this location are turned up vertically against the structure of the Le Hudette ridge which is interpreted as a reverse faulted anticline (Plate 14). The contact is taken above the last quartzite which actually contains some coaly stringers. Immediately above this is 20 cm of mudstone, overlain by 0.5 m of fine to medium sandstone with an uneven sharp base, rip-up clasts of mudstone and large plant fragments.

Brenot Formation

The base of the Crassier Group, above its lower contact, is dominated by sandstone with only very thin interbeds of mudstone. The sandstones are mostly fine grained and very fine grained with a very variable amount of organic content from none to abundant. Good exposure in Le Hudette Creek allows detailed examination of this part of the section. The mudstone beds gradually increase in thickness up section between the more resistant sandstone ribs and they become more carbonaceous with the appearance of numerous coaly layers and stringers. The sandstone units also start to thicken, to 4 m or so, while the mudstones are rarely over 1 m thick. From the Formation base, thirty two sandstone ribs are encountered before a major gritty sandstone unit, 15 m thick, is reached. The thickness of this part of the section below the gritty sandstone unit can be estimated as 275 m.

The above description compares well with the Brenot Formation as described by Hughes (1964) and his subdivisions might be useful in this area.

In the southern portion of the property the Brenot Formation does not outcrop.

Dresser Formation

The section continues eastwards from the Brenot contact and downstream on Le Hudette Creek towards the property boundary (Plate 15). The base of the Dresser is picked as the first major sandstone unit which contains coarse and gritty lenses throughout. It contains large crossbeds with individual sets up to 5 m across. Above this, the formation consists of additional thick sandstone units, interbedded with thin units of fine sandstone, silty sandstone, and mudstone which may contain some carbonaceous material. The thick sandstone units are characteristically

PLATE 16: Outcrops B008 & D001

Cyclothems of the Dresser Formation. Ridge in middle distance is formed by a Conglomerate, just visible as patches of light grey.

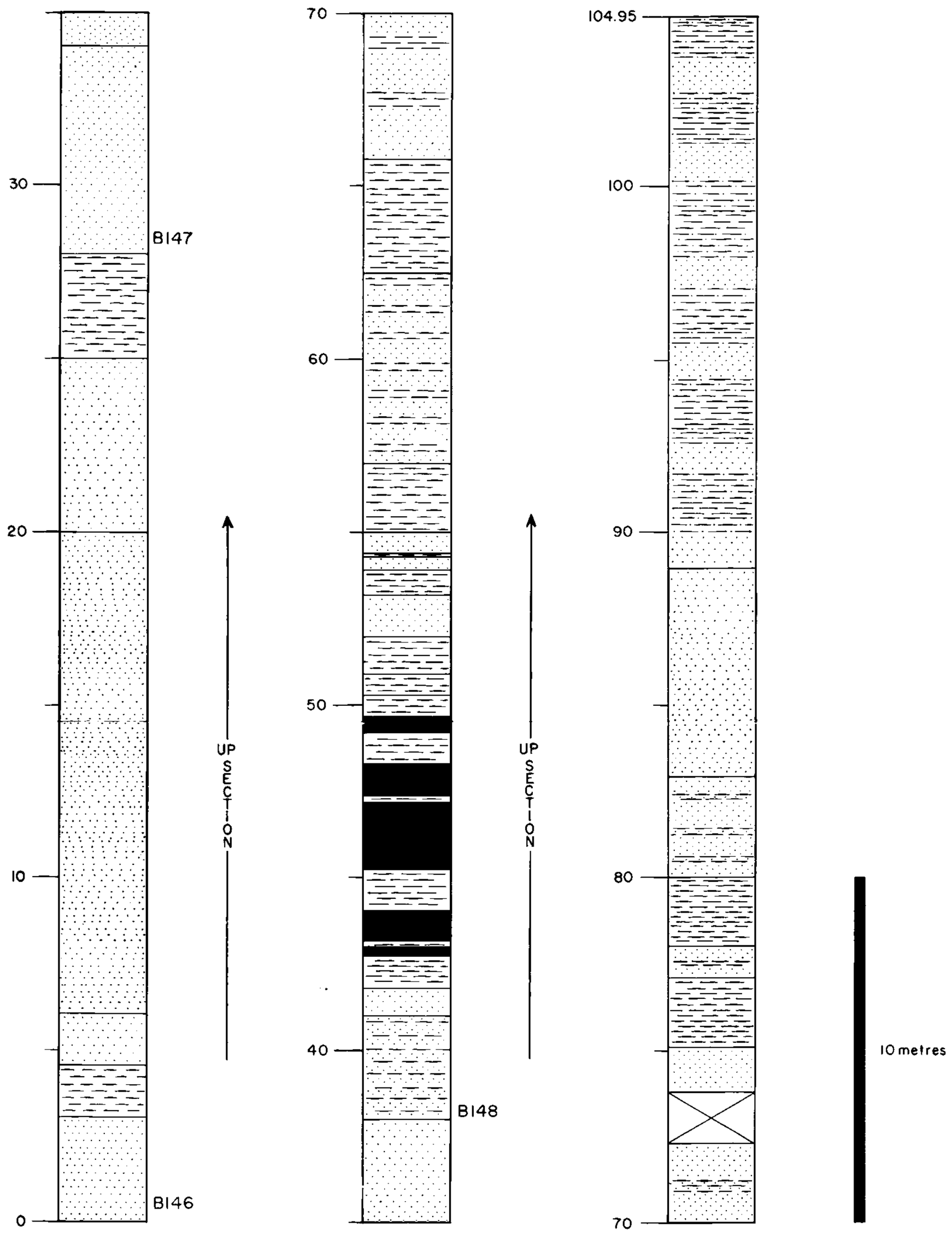
crossbedded and gritty and may contain larger chert pebbles. Large coaly plant fragments or casts are also common. The sandstone units contain a wide variety of grain sizes which have considerable lateral variation. They form upstanding ribs strongly resistant to erosion. Further east the exposure runs out, and the upper contact is not visible.

The upper part of the section above the first gritty sandstone is very like the description by Hughes (1964) of the Dresser Formation. Roughly 150 m thickness of this part is exposed.

In the south of the property, the exposures which are thought to be Dresser equivalents are of a slightly different nature. The Dresser beds, which outcrop just off the property along the Hasler Creek road, show thick massive conglomerate units as well as thick medium to coarse pebbly sandstones. These are separated by quite thick sequences, perhaps as much as 50 m thick, of coal measure - style cyclothems (Plate 16). The cyclothems are made up of interbedded fine sandstone, siltstone, mudstone and coal (see Rock Types section 3.1). Some of these sandstones can be quite thick and medium grained.

The conglomerates along the road are perhaps fault repeated (Figure 22). One can be traced eastward along the sides of the Brazion Creek valley. Here the unit was measured as +18 m thick. It does not always consist entirely of conglomerate but changes laterally into a heterogeneous, crossbedded, coarse, sandstone unit with thick lenticular bodies of conglomerate and very thin interbeds of fine sandstones.

A very similar unit is seen at the junction of Judith Creek and Hasler Creek and in the high ground immediately to the north. It is possible that this thick conglomeratic sandstone unit persists



LEGEND

- SANDSTONE
- SILTSTONE
- MUDSTONE
- COAL
- LOST CORE
- ARGILLACEOUS
- B146 OUTCROP NUMBER

ESSO MINERALS CANADA
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FALLING CREEK

SUSAN CREEK
STRATIGRAPHIC SECTION

Figure 8

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FALLING CREEK STRATIGRAPHIC SECTION SUSAN CREEK 93P-5

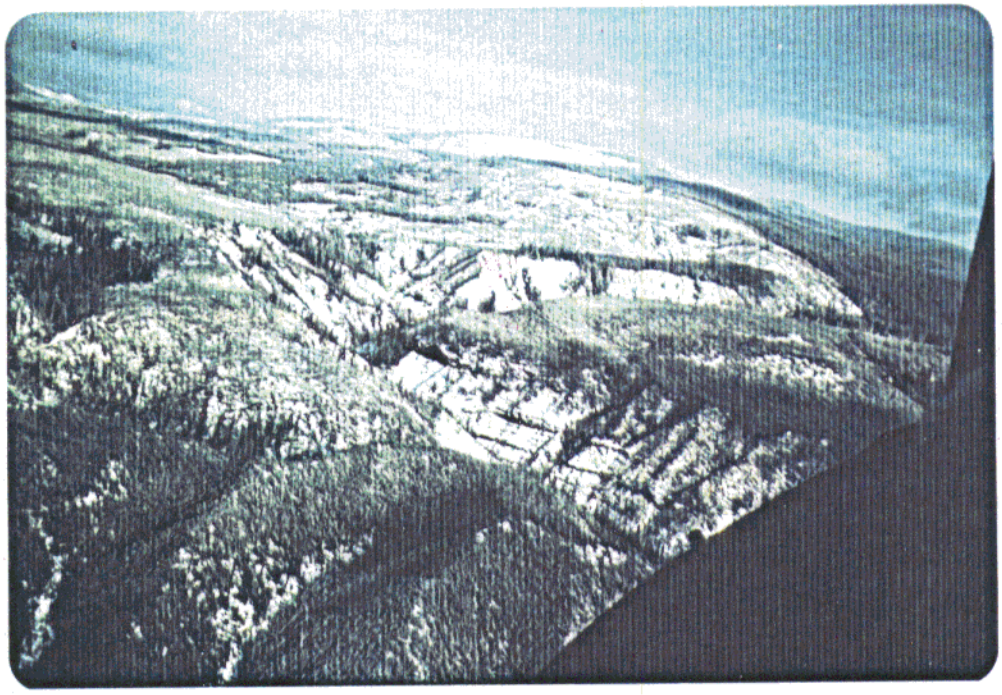


PLATE 17: Susan Creek Canyon. Base of the Dresser Formation?

at approximately the same horizon over much of the southern half of the property, within the Dresser Formation.

North of the Susan Creek, Brazion Creek junction good exposures are found in the canyon walls above Susan Creek (Plate 17). Here as much as 100 m of section is exposed and is thought at the present time to represent the base of the Dresser in this area (Figure 8). It is substantially different, however, from the Le Hudette Creek section further north. It consists for the most part of cyclothems, each one usually not much more than 5 m thick, and mostly incomplete or barren.

One coal horizon with many partings occurs. The upper and lower splits are discontinuous laterally and the thickest portion is highly sheared and may be structurally thickened.

These cycles are interrupted by very thick units of crossbedded sandstone (Plate 5). Unlike the thick sandstone units elsewhere, they are seldom coarse grained or gritty and chert pebbles are rare. The long outcrops showed that these large sandstone units are not all laterally continuous. One at least ended quite abruptly by interfingering laterally with the cyclothems described above.

Just to the northwest of the Willow Creek licenses, Dresser beds outcrop again on a trail running west from Willow Creek. In this location only the sandstones are exposed and it is hard to assess the proportion of more recessive lithologies. The section is, however, clearly sandstone dominated. The outcrops are thick, "moderately clean" sandstone units, which are medium to coarse grained and occasionally have conglomerate lenses. These exposures indicate that the Dresser in this area has a much lower proportion of interbedded finer lithologies than further south on the Falling Creek licenses.

The presence of pebble clasts, grits or conglomerates are not taken as definitive characteristics of the Dresser. These lithologies are certainly present in horizons well above the Contact Seam at the top of the Dresser. A coarse gritty sandstone found in 81-2 above Dave's seam, in the Gething Formation, is evidence of this (Figure 29).

The lower half of drillhole 81-1 is interpreted as intersecting beds of the Dresser Formation. This being the case the thick sandstone units are represented by a blocky log response characterized by low gamma counts and low porosity values on the neutron log. These responses are interpreted to result from the cleaner nature of the Dresser sands and their strong silica cementing and quartz overgrowth. (Plates 5, 10, 11, 12 & 13 are all thought to represent the coarser lithologies of the Dresser, while the photo sequence of the lower part of Drill Hole 81-1 shows a section through Dresser strata).

Coal in the Dresser occurs as thin seams, usually less than 1 m thick. The seams occur infrequently through the section; many are believed to be laterally discontinuous. No seams of economic importance have been found in this or lower parts of the Crassier Group to date, with the possible exception of the Contact Seam.

The Contact Seam intersected in DH 81-1 is of high rank. It is a hard, bright and dull lustrous coal, and is 2.06 m thick. This seam is thought to occur in the top 50 m of the Dresser.

No accurate measurements for the thickness of this central part of the Crassier Group (Dresser) can be made from the property. This is partly due to the difficulties experienced in defining an upper and lower contact for the formation.

The Formation's upper, and probably in many places, its lower boundaries, appear to be transitional. The boundaries, probably do not represent good chronostratigraphic horizons.

The exposures in Le Hudette Creek indicate a minimum thickness of 150 m for the Dresser. The best thickness estimation, however, is in the scarp slope southeast of Skinny Lake (Figure 14) which is interpreted as an almost complete Dresser section. This is measured at just over 300 m.

Gething Formation

The sequence for the rest of the Crassier Group above the contact seam will be included in the Gething Formation for the purposes of this report as there is little doubt that most of the rocks are correlatable with the regionally recognized Gething strata.

The Gething Formation is composed of coal measure cyclothems as discussed in the Rock Types section (3.1). The cycles are frequently complete and contain an organic phase as coal and/or carbonaceous mudstone. There is a marked increase in the frequency of coal seams. Thick sandstone units become less common up section and sandstone may be missing altogether in some cycles.

At least two conglomerate horizons have been encountered. One forms a clearly visible resistant ridge just west of drill hole 75-5 in the south. There is again some doubt about the lateral continuity of these conglomerates, and their usefulness as correlatable markers.

The cyclothem deposition of the Gething is somewhat irregular in nature in terms of cyclothem thickness and composition. Coal seams have a tendency to occur in zones. One exposure northwest of Exposure Creek contains seven seams, outcropping in roughly 50 m of section (Figure 26).

In core, coal zones are well illustrated in DHs 81-2 and 81-3. A comparison of these two holes shows DH 81-2 has a higher proportion of sandstone. DH 81-3 contains many mudstone dominated cycles and at the base a sequence of regular cycles all containing carbonaceous mudstone. There is little evidence to allow correlation of the two holes though they are believed to penetrate a very similar stratigraphic interval from mapping and cross-section work. The inconsistencies may be explained by structure. DH 81-2 is certainly greatly affected while the dipmeter from DH 81-3 shows relatively quiet structure and shallow dips. Alternatively they may demonstrate marked lateral changes in the Gething sedimentation.

The log responses in the Gething Formation are more variable than those of other formations within the Crassier Group. Low density responses are noticeably more frequent than anywhere lower in the Crassier Group, while the natural gamma shows generally higher readings. Where conglomerates or coarse sandstone do occur they have a similar log response to those in the Dresser.

The Gething Formation contains the coal seams of economic importance occurring on the property. The lowest and possibly the only clearly correlatable seam (to date) is Dave's Seam. The best correlation picked from the geophysical logs is between DH 81-2 and DH H-1. This is encouraging since the two holes are 16.5 km apart. Dave's Seam in DH81-2 has a true thickness of 3.62 m. There are eight seams in DH81-2 and six in 81-3 over 1 m thick that are thought to be in the Gething section.

Many seams over 2 m thick of the Gething Formation outcrop at the surface. These are summarized on the coal outcrop map (Figure 28). Most of these are interpreted to be stratigraphically higher than Dave's Seam (Figure 27).

Using the composite log correlation proposed in this report (see Figure 29) the thickness of the Gething Formation can be estimated to be more than 440 m thick. This estimate is made by adding together parts of the section from DH 80-1 and 81-3 because it is known that they are both from regions of relatively 'quiet' structure and there is nothing to suggest that parts of the formation are repeated or omitted. It must be pointed out that any correlation between the two is questionable. A thickness for the Gething nearer 500 m might be more accurate.

DISTINGUISHING FEATURES OF THE FORMATIONS

Extreme caution must be used in assigning any outcrop to a particular part of the succession.

The Moosebar Formation was examined outside the property boundary. It consists almost entirely of mudstone in the lower half. Concretionary ironstone and silty horizons occur infrequently. The base of the formation has a conglomerate unit up to 2 m thick. Its development is reported to be irregular, however, over fairly short distances. The conglomerate contains well-rounded clasts of chert in a mudstone matrix. The matrix is the most reliable feature to distinguishing it from conglomerates of the Crassier Group, which have a sandy matrix.

The different parts of the Crassier Group are hard to define. It can be clearly seen that they are recognized by packages of strata and not by individual horizons. The Gething has more coal, less sandstone and less thick sandstone units than the Dresser. Coarse lithologies are uncommon in the Gething. The Dresser is characterized by thick sandstone bodies often containing coarse lithologies. Fairly thin (5m) bodies of conglomerate or conglomeratic sandstone are found in the lower part of the Gething and not higher up.

The Brenot has more regular cyclothems compared to the Gething but they are far more frequently barren. Sandstone is dominant in the cycles and appears to have a higher silt and clay content than the sandstones of the Gething. Units over 5 m thick, or individual cyclothems over 10 m thick, are rare in the Brenot.

3.2.4 Surficial Deposits

The surficial deposits consist of glacial till, and in the valley bottoms, fluvial sands and gravels. The depth of Glacial till is variable since it fills depressions of a Pleistocene land surface. It is generally thickest in valleys and may be entirely absent on high ground. Drill Hole 81-3 was the only hole of the 1981 program that encountered Glacial till. Here the till was 20 m thick. During trenching operations it was not uncommon to encounter pockets of till up to 3 m thick. Of the holes drilled, (in previous years), in the northern part of the property none encountered Glacial till though some of the valley bottoms, particularly that of Falling Creek itself, may have quite thick deposits of Glacial and fluvial origin.

Except in low lying areas, overburden should not be a major mining problem.

3.3 ENVIRONMENT OF DEPOSITION IN THE UPPER CRASSIER GROUP

The depositional environment of the Upper Crassier Group was dominated by a non-marine process. The composition and sedimentary characteristics of the facies suggest a terrestrial origin.

The Dresser and Lower Gething Formations contain thick units of coarse sandstones and conglomerates. The conglomerates have a clean sandstone matrix and are discontinuously bedded. These facies suggest a fluvial environment with a rapidly changing flow regime. Thin lenticular pebble beds may represent lag deposits, sorted by winnowing action. The most coarse units may have been deposited during periods of flooding. The deposits could then have been reworked in the fluvial channel system removing the finer grained constituents.

Thick units of cross-laminated, medium-grained sandstones represent a more moderate, less variable fluvial environment.

Fine sandstones and siltstones with abundant carbonaceous plant fragments are indicative of calm weakening currents which allowed fine detritus to settle out. These fine sediments contain rootlets and paleosoil horizons, indicating they may have formed a land surface for short periods of time, presumably as overbank deposits.

Coal seams and carbonaceous mudstone facies usually indicate a swamp with lush vegetation conducive to peat formation. The climate at the time was certainly wet and humid.

The above facies may be found repeatedly throughout the section. The cyclicity of these sediments may be explained by the aggradation of sediment from shifting river and stream channels flowing through swampy interchannel areas, on the edge of a subsiding basin.

Together these facies may represent a coastal plain with a source area in the mountains to the west. The coastal plain was within an area of regional subsidence. The Dresser Formation may represent deposition closer to the source area than deposits from the Gething Formation. Several shoreline changes, depositional highs and lows, and rapid facies changes occured in the Crassier Group due to the sea level changes from an expanding sea and the varying clastic supply from a Tectonically active and eroding source area.

Conditions for coal seam development in the Dresser facies are less favorable than those of the Gething Formation. The chances of finding continuous seams of appreciable thickness are therefore poor in the Dresser Formation.

PLATE 18: Bickford Anticline. Looking south from north side of Pine River valley.

PLATE 19: Bickford Anticline forms the ridge on right hand (west) side. Fisher Syncline is central with Falls Mountain in the east limb (left hand side). Licenses middle distance.

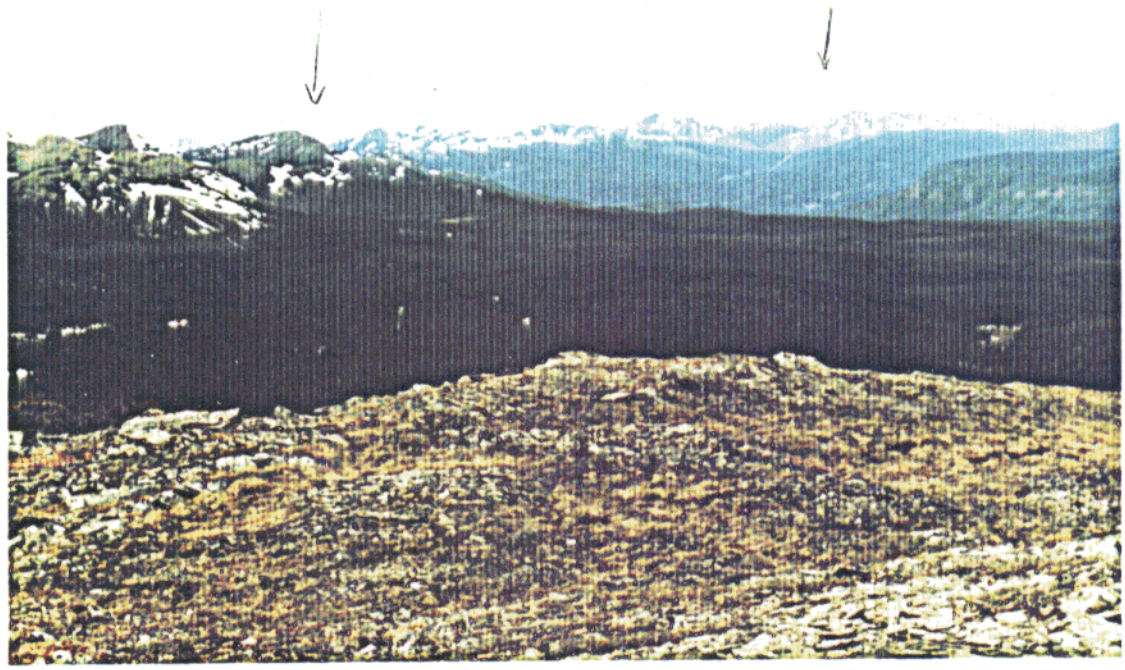


PLATE 20: Bickford Anticline left and Fisher Syncline Central. Looking north west from west central part to property (Alpine Meadows). Falls Mountain is right middle distance.

3.4 STRUCTURE

3.4.1 Regional

The licenses are situated in the Rocky Mountain Foothills. From west to east the foothills can be divided into an Inner and an Outer Belt on the basis of structural complexity. The licenses are just within the complex Inner Belt (Figure 4). The regional strike has a strong northeast-southwest trend parallel with the Rocky Mountains. The regional dip is to the northeast and successively younger strata are exposed in this direction.

3.4.2 Local Introduction

The major structural components of the Falling Creek area have an anticlinorium/synclinorium style. The coal measures are generally less competent than the older strata underlying them. They therefore demonstrate strain which is influenced by the major structures of the strata below.

The major structures in the area are, from west to east: the Bickford Anticline, the Fisher Syncline (Plates 18, 19, 20) and the Pine River Anticline (Figure 30). 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 east-west trend. The distances between the medians of the 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.

PLATE 21: Outcrop J173. Asymmetrical Anticline in Center Creek.

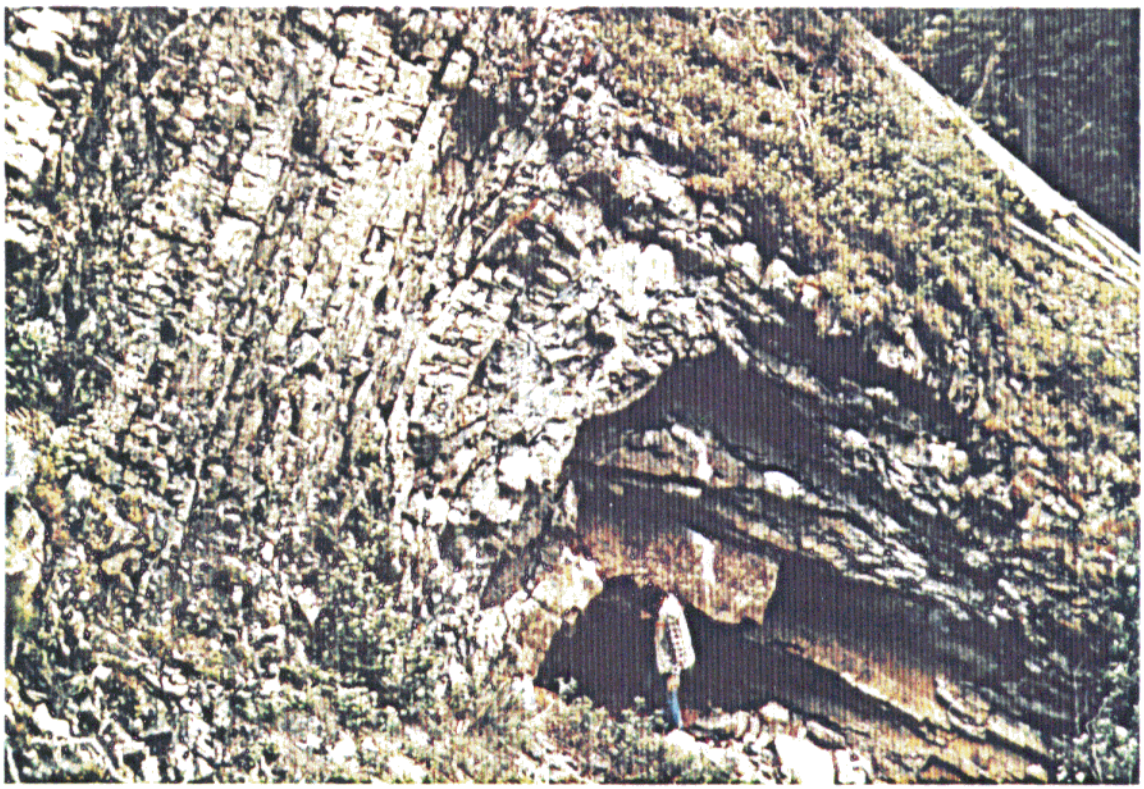


PLATE 22: Outcrop W208 Asymmetrical Anticline in Judith Creek.

PLATE 23: Forest Burn. Southwest property boundary to west of DH75-5 Looking south. Goodrich Peak just visible on horizon.

3.4.3 Folds

The most common structures seen in outcrop are folds. They are commonly angular and are often described as chevron folds. The beds retain roughly their original thickness. Slickensiding due to movement between beds is characteristic. Other varieties of fold styles also occur (Plate 25).

Folding is frequently asymmetrical with inclined axial planes (Plates 21 and 22). Megascopic folds of outcrop scale are sometimes found in cross-sections to be drag folds congruent with larger scale folds.

Examination of the stereonets, of poles to bedding made from strike and dip data along every section line, clearly illustrates the consistency in direction of fold axes (Figures 36-53). The axes directions from Willow Creek (in the extreme north) and Chamberlain Creek (in the extreme south) differ by one degree (Figures 36 & 53). This represents a strike length of more than 50 km. Local variations in this trend do occur and the most obvious variation on the property is in the forest burn area in the southwest. Here the fold axes are trending almost north/south (Figures 38, 39, 40). There is also a more subtle strike change through the south central part of the area around Exposure and Folding Creeks as previously mentioned. The trend here of 304° is perhaps 10° less than the regional trend.

The folds of the southwest forest burn area, just west of DH 75-5, also have steeper plunges. The steronet of Forest Burn B_1 shows a plunge of 13.1° (Figure 50 and Plate 23). On average, elsewhere the fold plunges are much shallower. In the north end of the property the average trend and plunge is 315° and 4.2° respectively. In the south there is evidence that the plunge is in the opposite direction at about 3.5°. This suggests that the

PLATE 24:
Outcrop R005
Contortion in the core of a (box) Anticline with overturning in the limbs

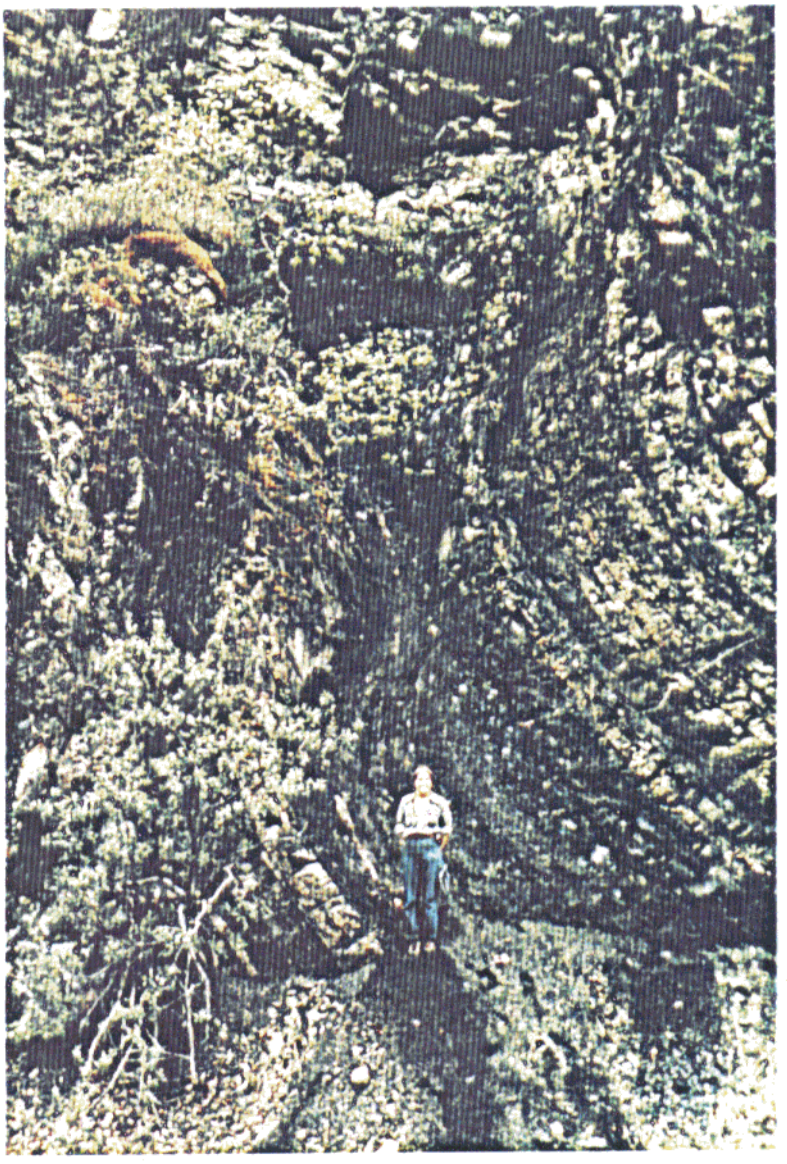


PLATE 25:
Outcrop B148
Disharmonic folding in Susan Creek

structures may form an arch. The high is located in the central part of the property around the headwaters of Center Creek. This explains the presence of beds currently assigned to the Dresser Formation outcropping here, while on trend to both the north and south, beds of the Gething Formation are found. It must be stated that many of the stereonets are compiled from data along the entire length of the section and therefore probably represent structures from quite separate domains.

This is demonstrated in the Exposure Creek section (Figure 17) which is made by joining it with the Hasler North section. Examination of the stereonets from the two halves clearly show that the trend and plunge is different and that they probably do represent separate domains (Figures 42, 45). Lack of time prevents further analysis of the data in this manner.

Overturned folds are rare. When they occur, the steepest limb in an asymmetrical fold is pushed a few degrees past the vertical as in portions of the east limb of the Bickford Anticline. The photograph of oupcrop number R005 shows another isolated example (Plate 24).

Folding is probably conical. In most cases, however, the conical angle is less than 10° and axial plunging is very shallow. Folds may have strike lengths of many kilometers and for the purposes of cross-section compilation most folds can be treated as cylindrical.

3.4.4 Faulting

Fault planes on the property strike roughly parallel with the axes of folds. Faults are usually closely linked with the fold deformation. Where faults do run oblique to the regional strike, they may result from an 'en echelon' pattern in the fold development. Faults may develop in the limbs and in the cores of folds. The fault plane will usually dip in the same direction as

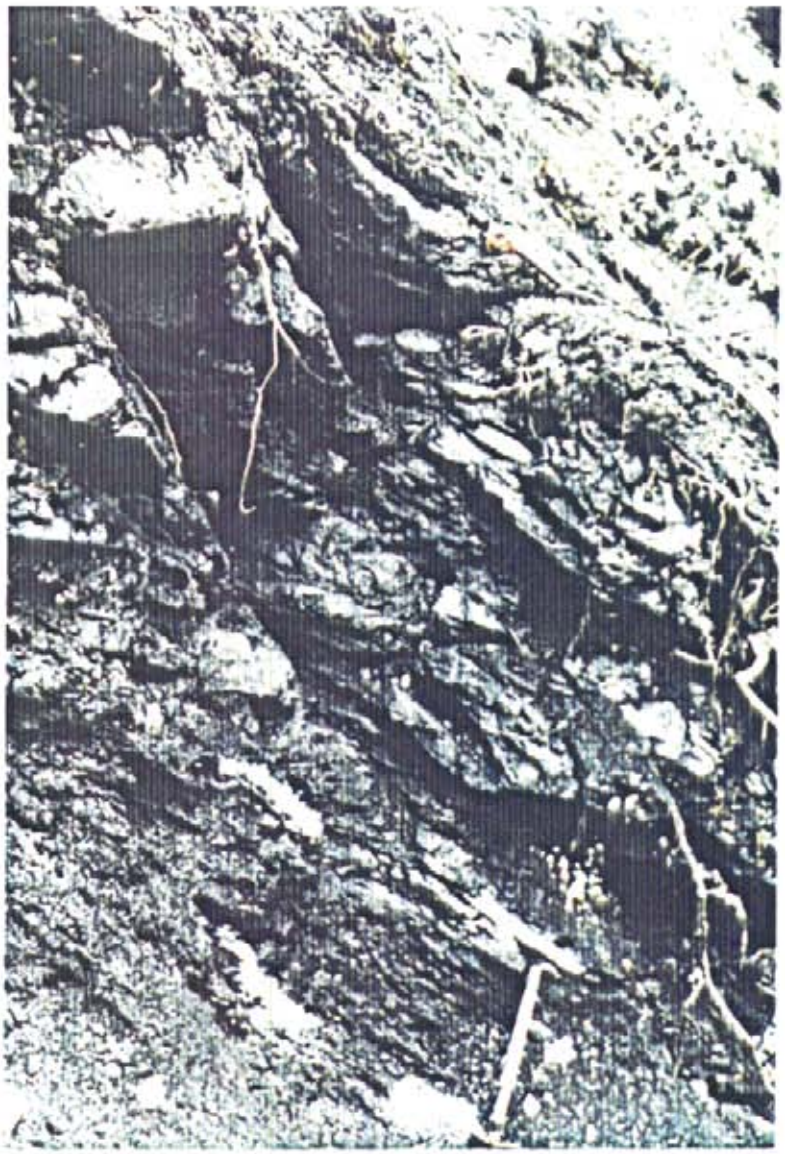
the bedding but more steeply. Displacement of folded strata may be greatly increased by associated faulting yet the faulting may pass unnoticed from examination of outcrop relationships at the surface.

All the faults drawn on the property are steeply dipping reverse faults. Although many have been observed in the field, great difficulty was experienced in determining foot wall and hanging wall relationships. They are drawn on the sections largely on the basis of a "best fit" principle. Thus the location of some, and the Hade angle of most are interpretive.

The reverse movement in the hanging wall may be either to the southwest or to the northeast.

The fault throws may have values ranging from less than ten meters to hundreds of meters. The throw may also be variable along the length of a fault. Faults are characteristically continuous for many kilometers in a strike direction.

PLATE 26:
Outcrop W224
Shearing in coal



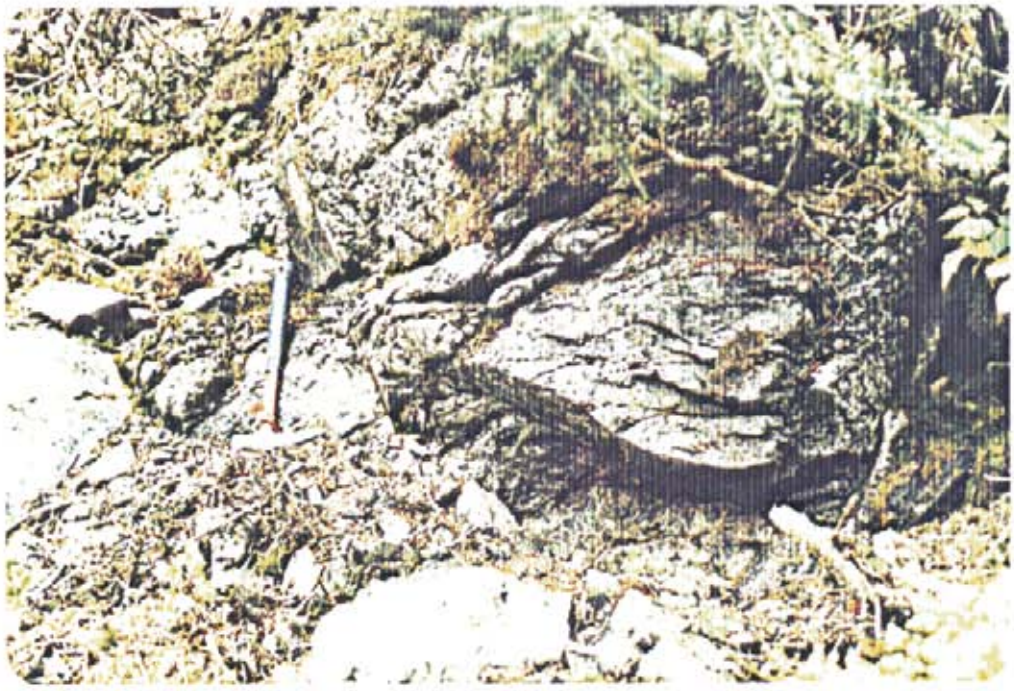


PLATE 27: Outcrop H103. Slickensided surfaces in a massive conglomerate

PLATE 28: Outcrop H038. Contortion of a resistant sandstone bed

3.4.5 Discussion

During deformation of coal measures, stresses are often relieved by movement in the coal seams. As a result features of strain are common in the coal seams on the property. Photo W224 shows typical shearing found through the coal (Plate 26). Much more competent beds may also be deformed in this manner; photo H103 shows multiple slickensided surfaces in a massive conglomerate bed and photo H038 shows contortion in a resistant sandstone unit (Plates 27 & 28).

The 'quietest' structural area is in the southern portion of the property. Here, the folding achieves the longest wavelengths, lowest amplitudes and faulting may be at a minimum (Figures 20 & 21). Drill Hole 81-3 encountered shallow dips with little evidence of structural disturbances. Elsewhere, our work presently indicates that tight folding and faulting is pervasive. Coal mining prospects in these conditions will most likely come from structurally thickened seams in the cores of anticlines or synclines which may prove continuous in a strike direction. Thickening of coal seams by fault repeating is also possible. Dip slope situations persisting in a strike direction may be expected.

Minor structures will be a constant problem for any underground opportunities.

PLATE 29: Outcrop X022. Faulted outcrops on Sharon Creek.

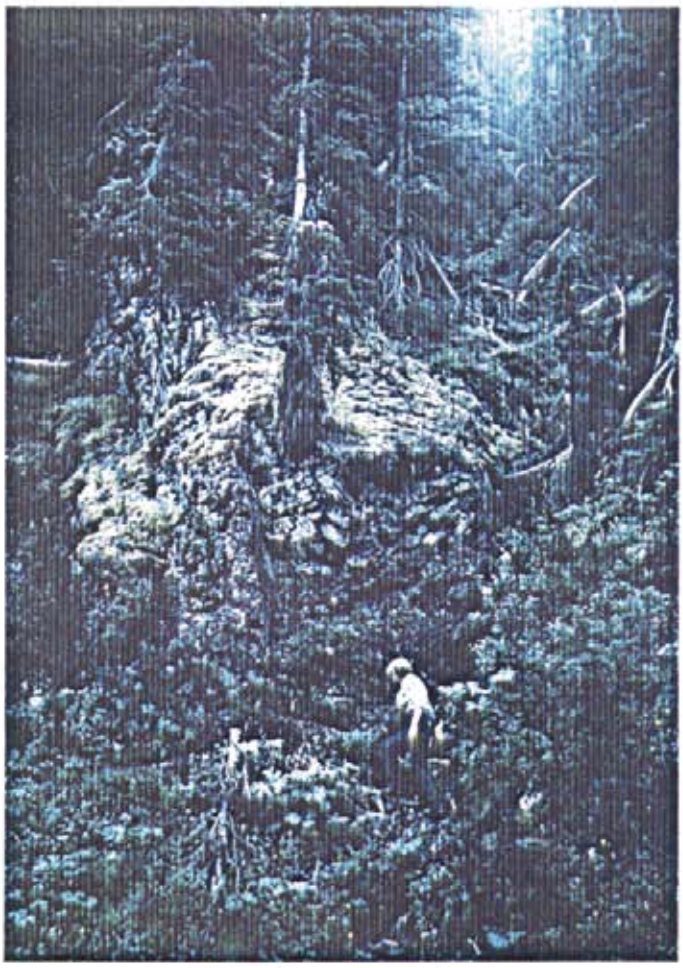
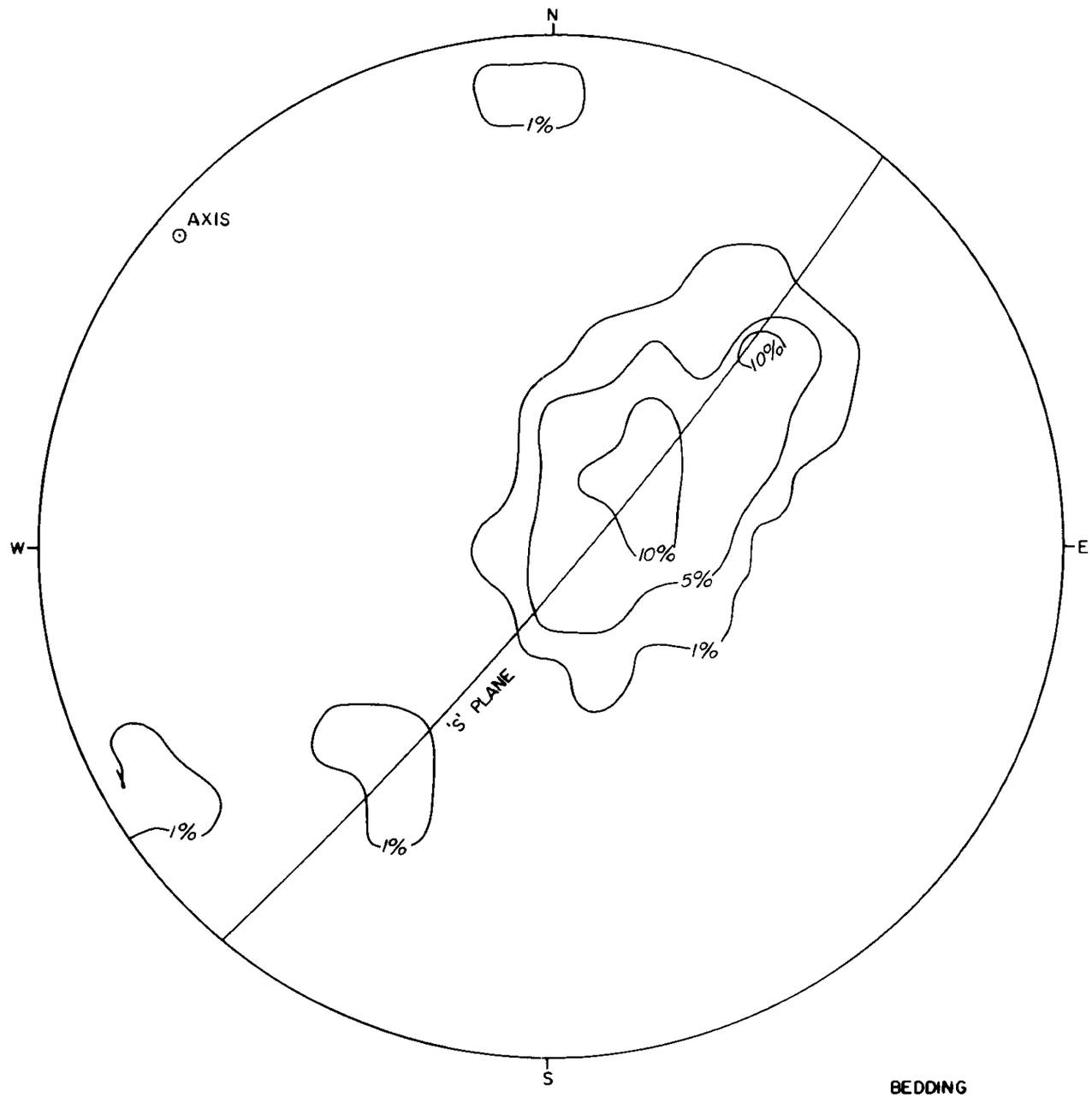


PLATE 30:
Outcrop X023
Faulted Outcrop
on Sharon Creek



BEDDING ATTITUDES	31
TREND	310.0
PLUNGE	5.9

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

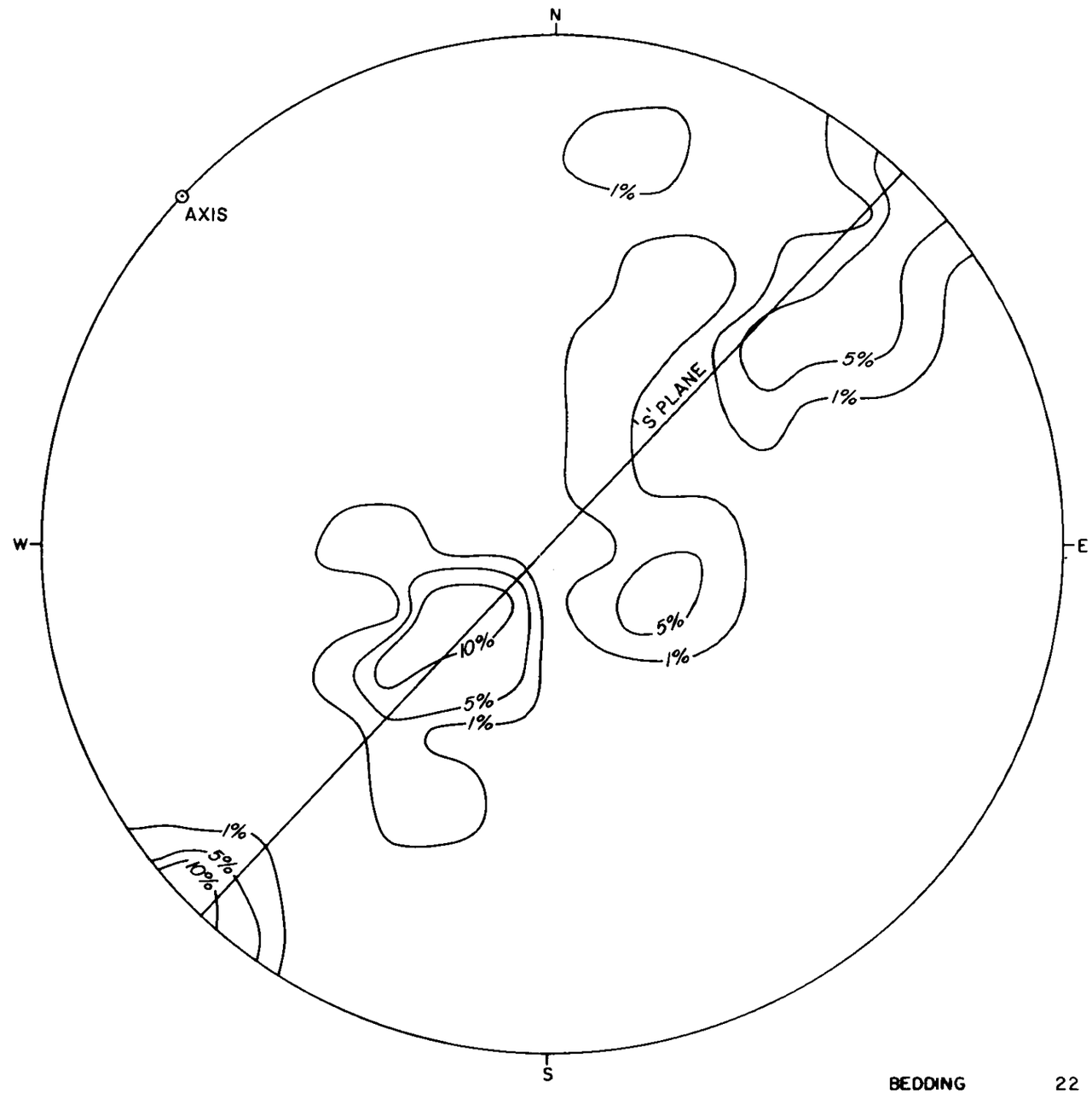
WILLOW CREEK SECTION

STEREONET OF POLES TO BEDDING

Figure 36

FEB. 1982

930-8



BEDDING ATTITUDES	22
TREND	314.3
PLUNGE	0.5

ESSO MINERALS CANADA
COAL DEPARTMENT

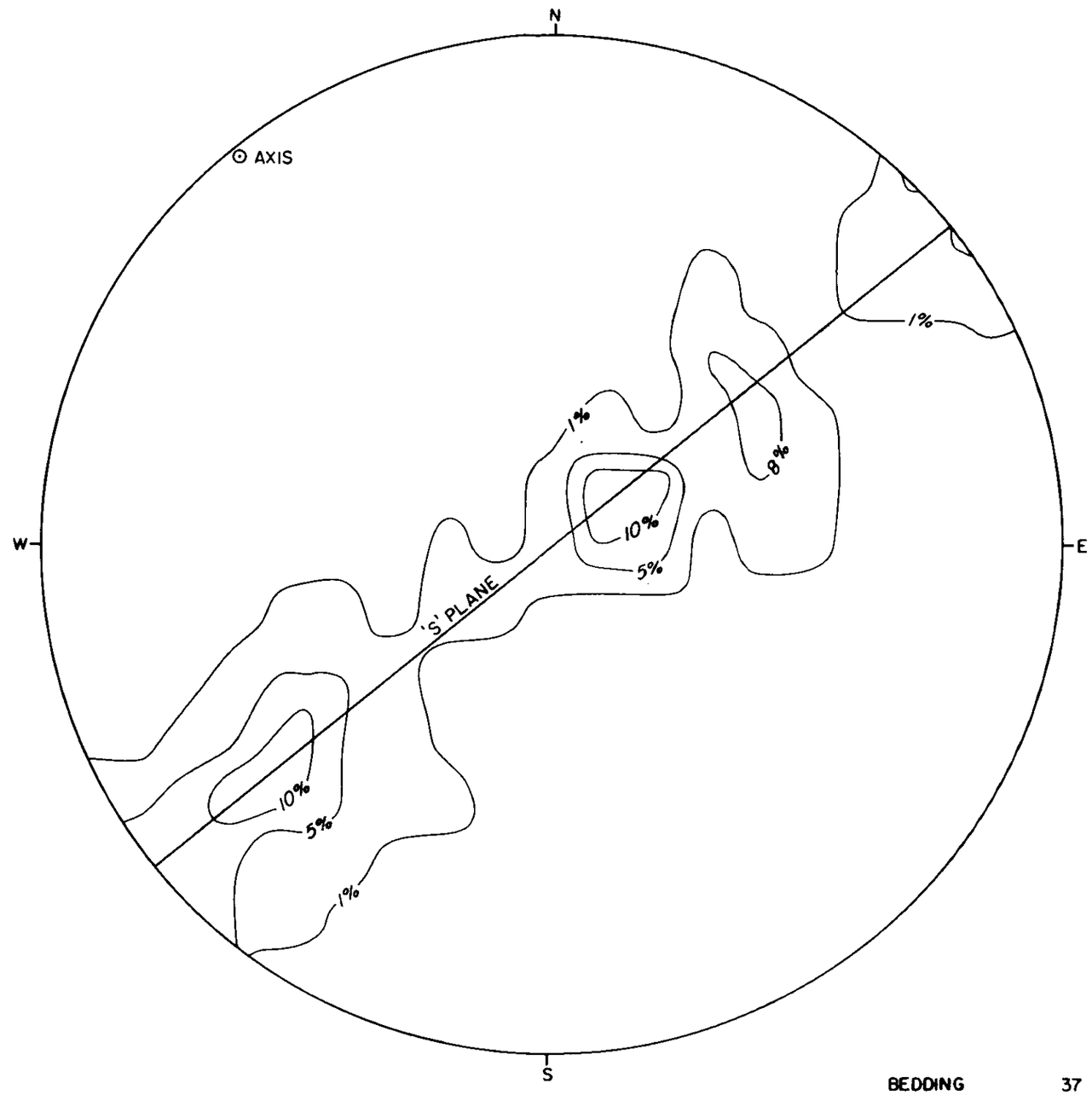
FALLING CREEK

SLIPPERY CREEK SECTION

STEREONET OF POLES TO BEDDING

Figure 37

FEB. 1982 930-8



BEDDING ATTITUDES	37
TREND	320.4
PLUNGE	2.3

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

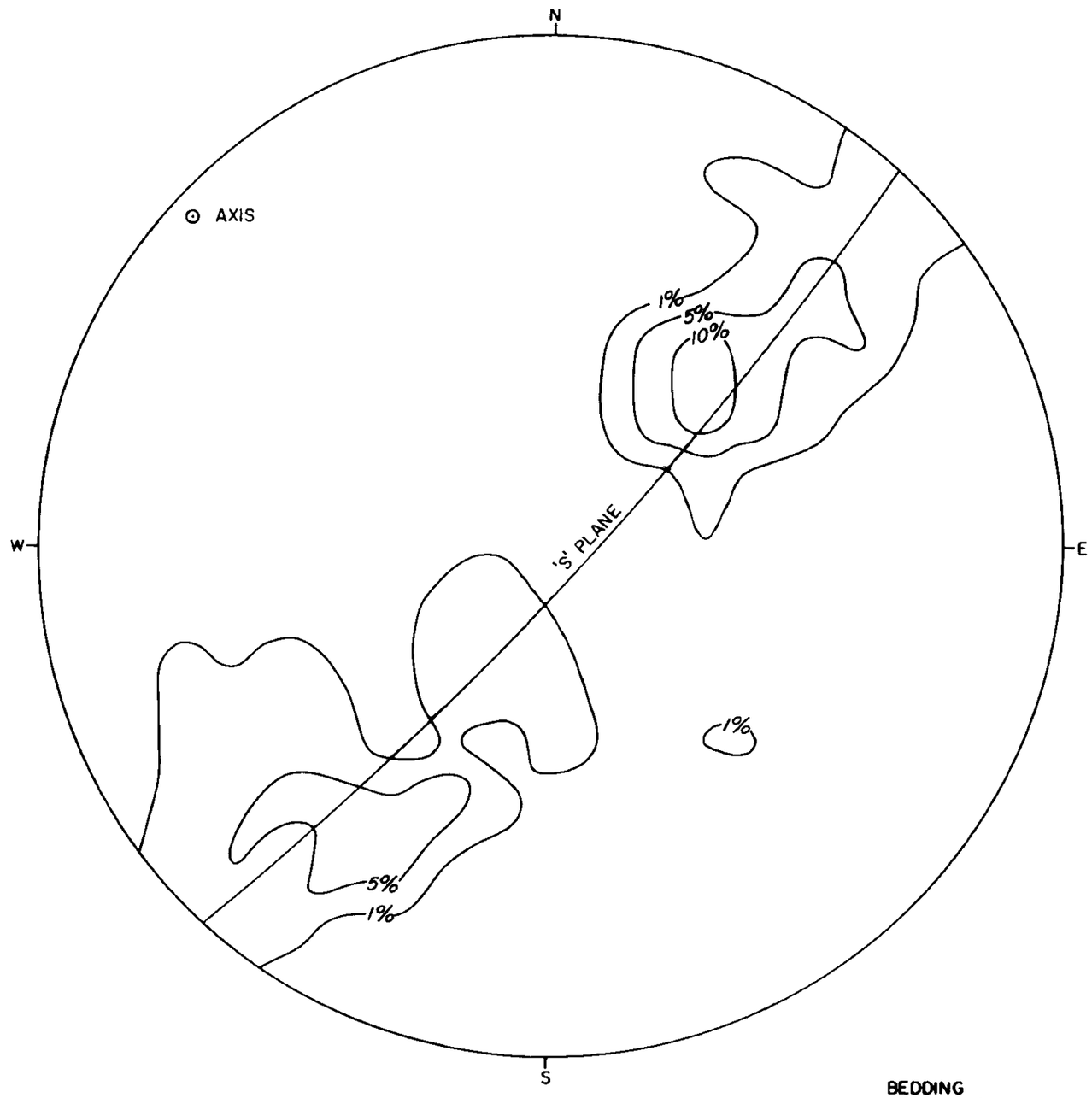
HUMMINGBIRD SECTION

STEREONET OF POLES TO BEDDING

Figure 38

FEB. 1982

930-8



BEDDING ATTITUDES	71
TREND	312.2
PLUNGE	5.8

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

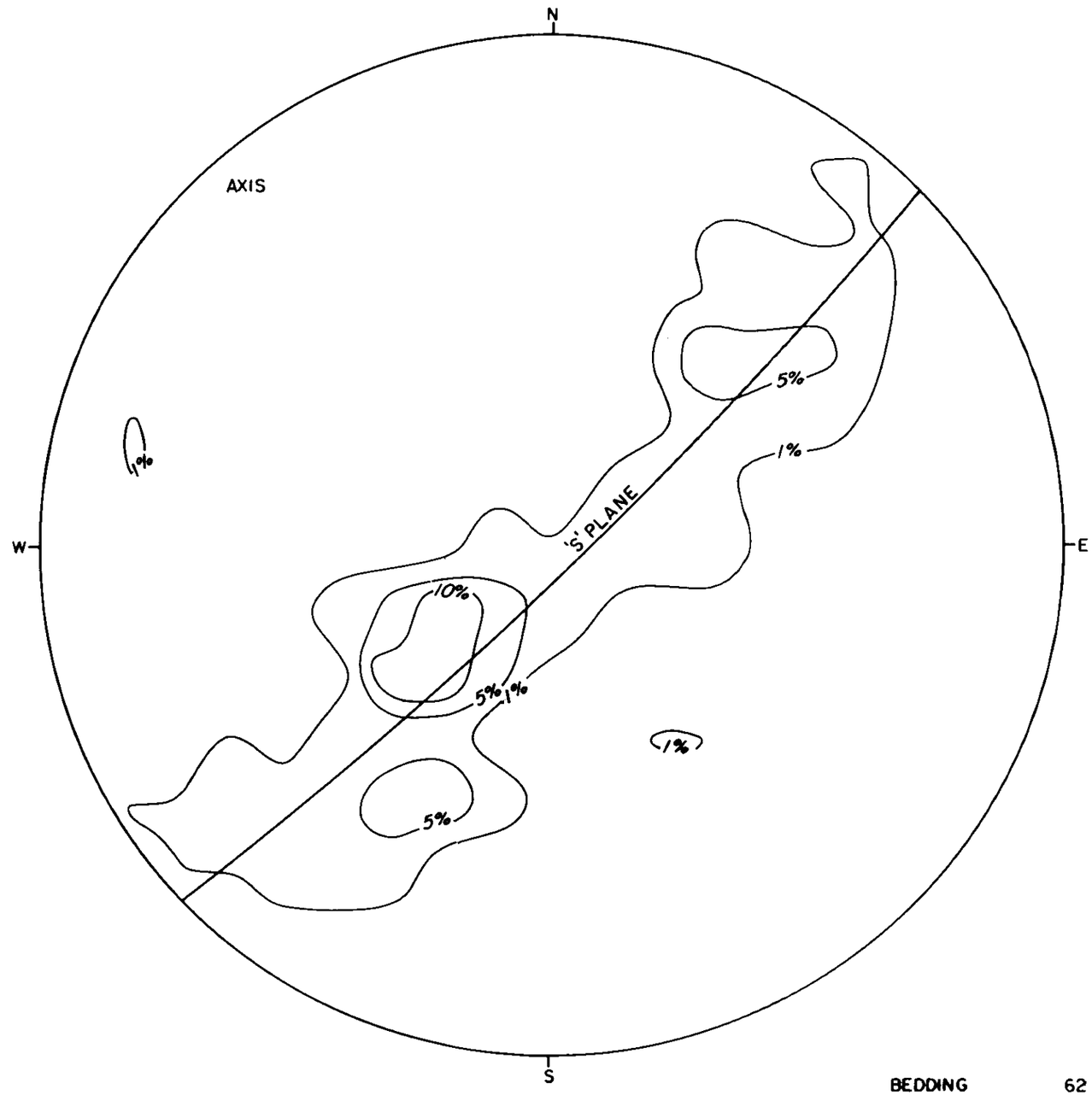
SKINNY LAKE SECTION

STEREONET OF POLES TO BEDDING

Figure 39

FEB. 1982

930-8



BEDDING ATTITUDES	62
TREND	315.8
PLUNGE	4.6

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

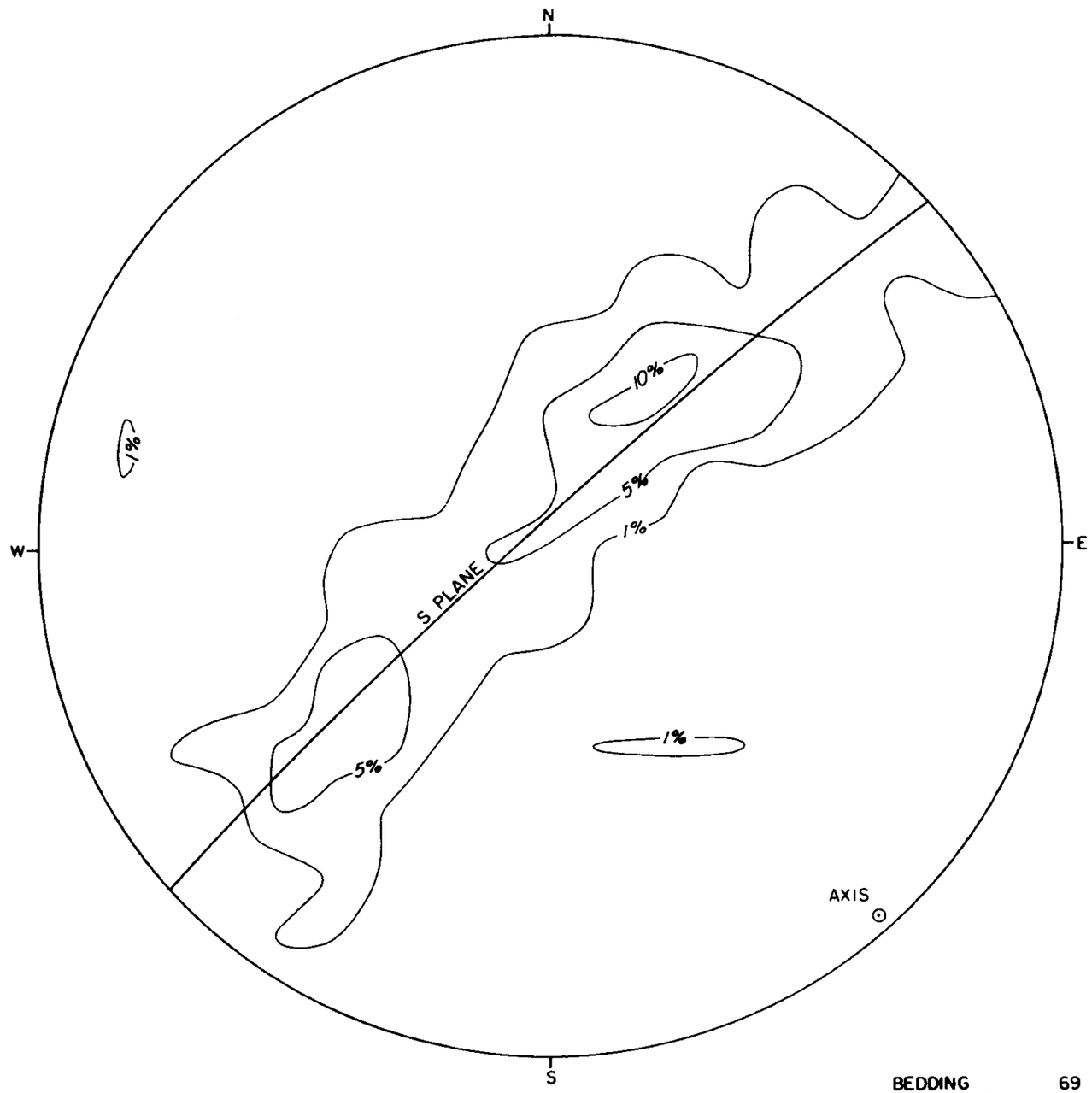
ALPINE MEADOWS

STEREONET OF POLES TO BEDDING

Figure 40

FEB. 1982

930-8



BEDDING ATTITUDES	69
TREND	137.2
PLUNGE	2.9

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

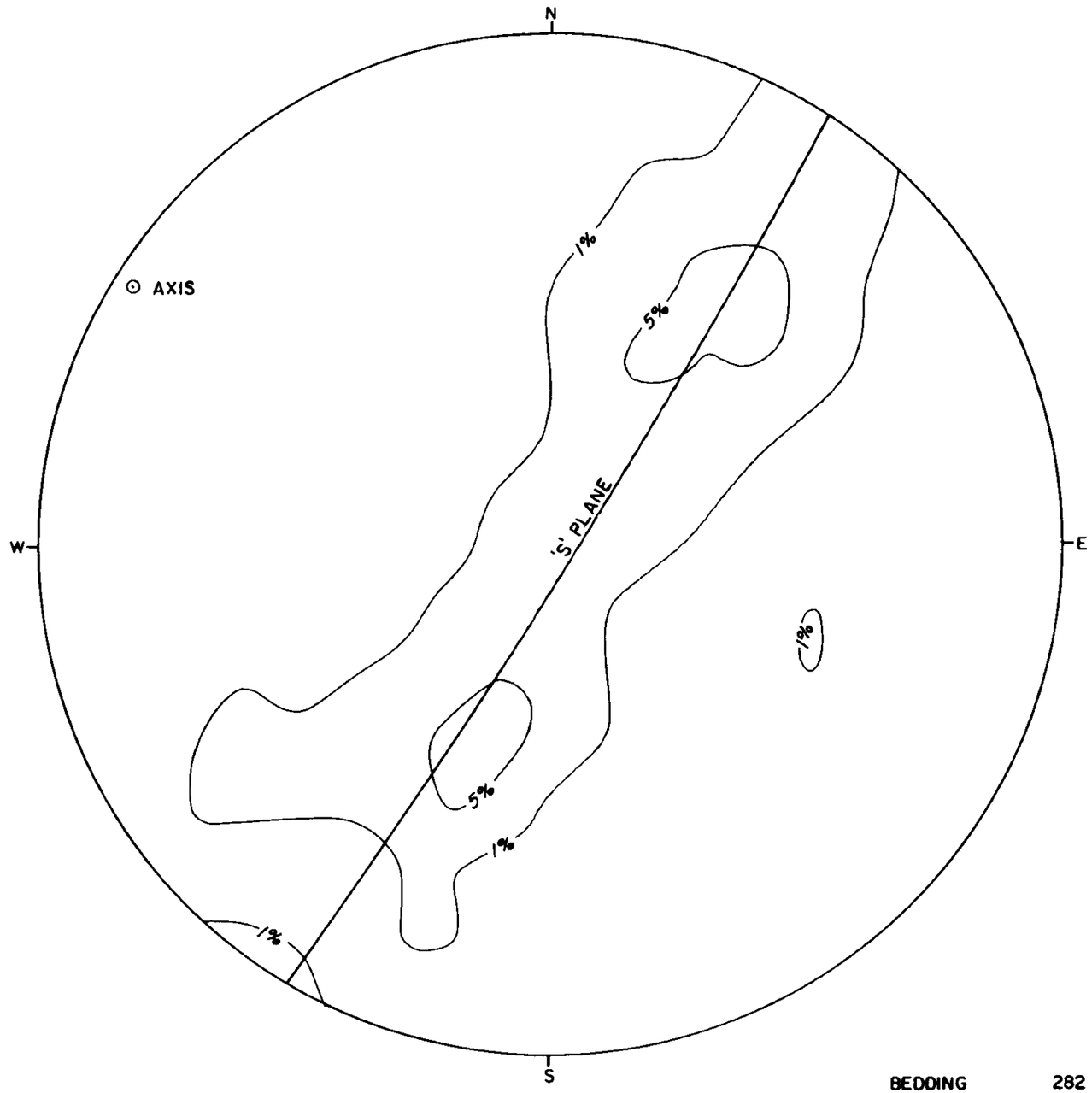
SHARON CREEK SECTION

STEREONET OF POLES TO BEDDING

Figure 41

FEB. 1982

930-8



BEDDING ATTITUDES	282
TREND	302.9
PLUNGE	3.2

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

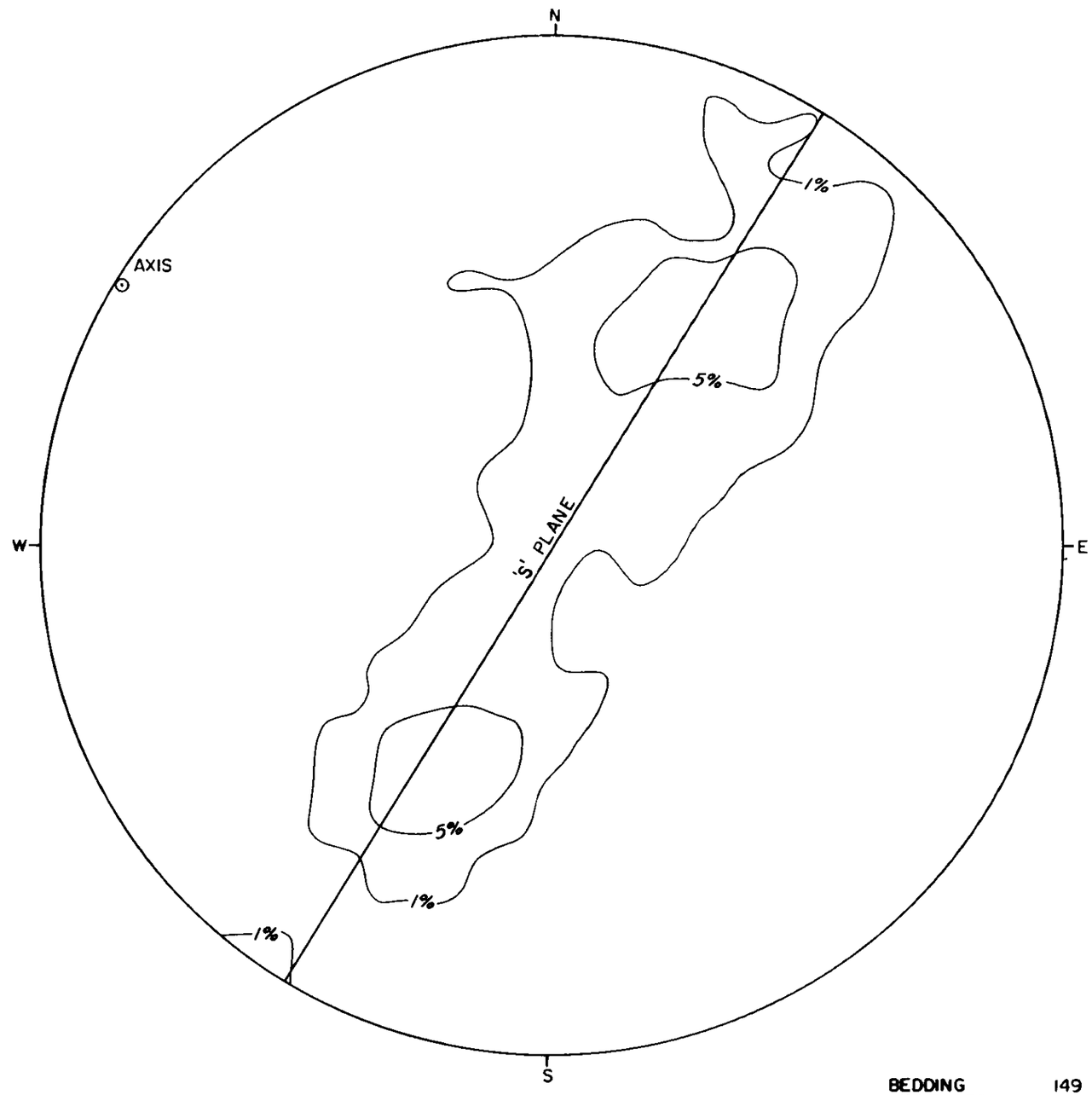
EXPOSURE CREEK SECTION

STEREONET OF POLES TO BEDDING

Figure 42

FEB. 1982

930-8



BEDDING ATTITUDES	149
TREND	300.9
PLUNGE	1.6

ESSO MINERALS CANADA
COAL DEPARTMENT

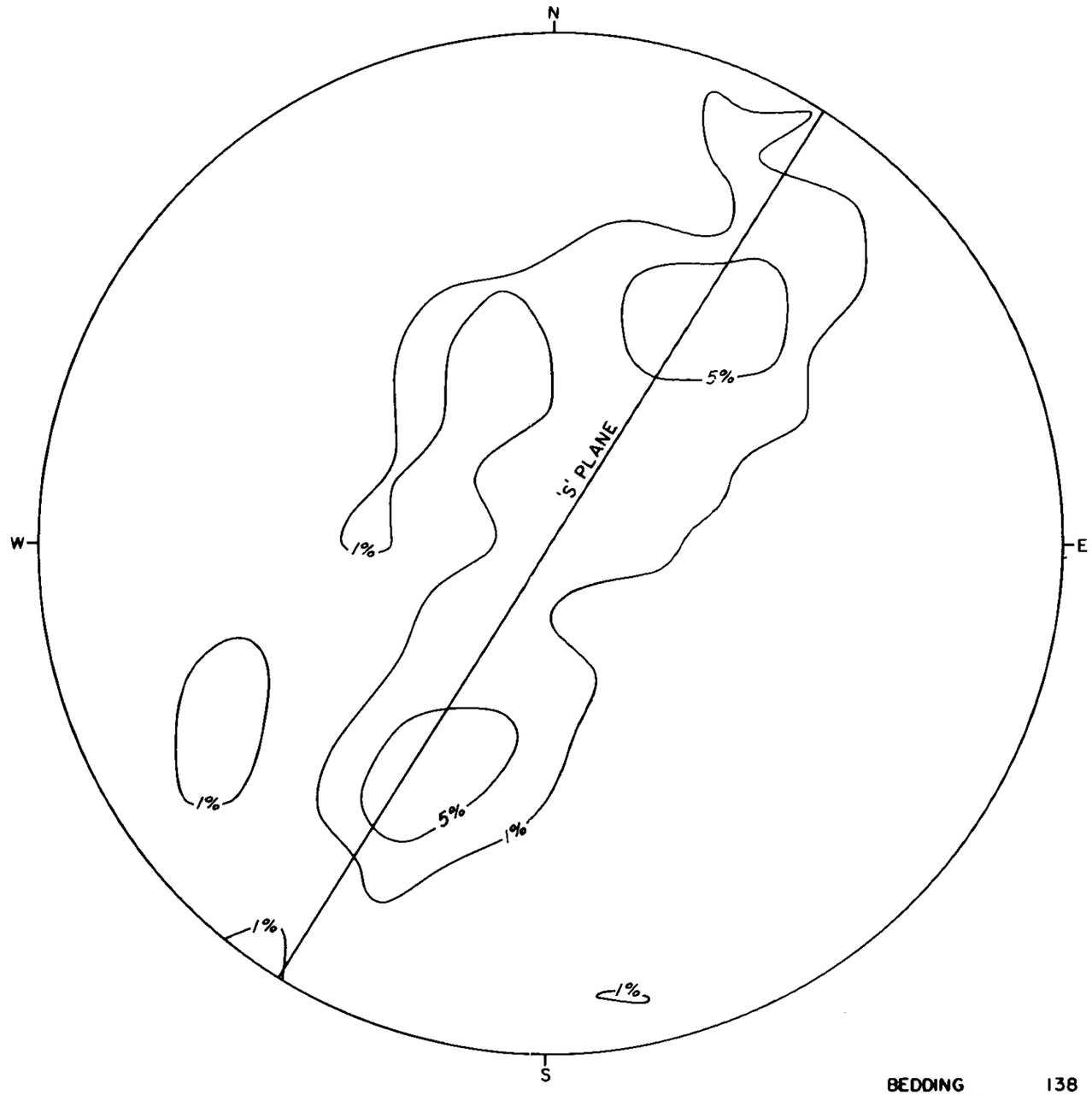
FALLING CREEK

EXPOSURE STRUCTURE SECTION

STEREONET OF POLES TO BEDDING

Figure 43

FEB. 1982 930-8



BEDDING ATTITUDES	138
TREND	121.9
PLUNGE	0.0

ESSO MINERALS CANADA
COAL DEPARTMENT

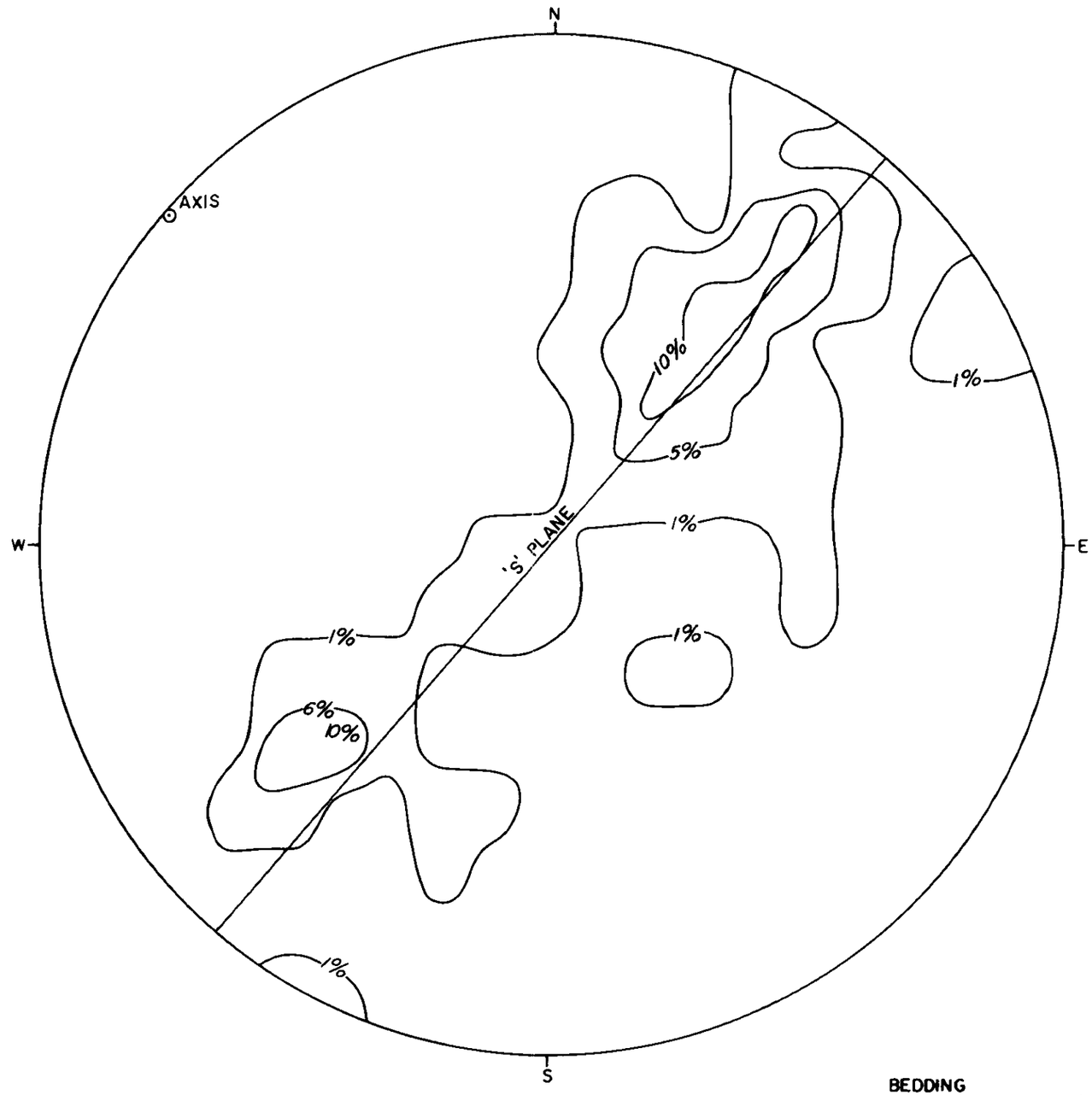
FALLING CREEK

EXP. STRUCT. I WITH D.H's 81-1, 80-1

STEREONET OF POLES TO BEDDING

Figure 44

FEB. 1982 930-8



BEDDING ATTITUDES	46
TREND	310.6
PLUNGE	1.1

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

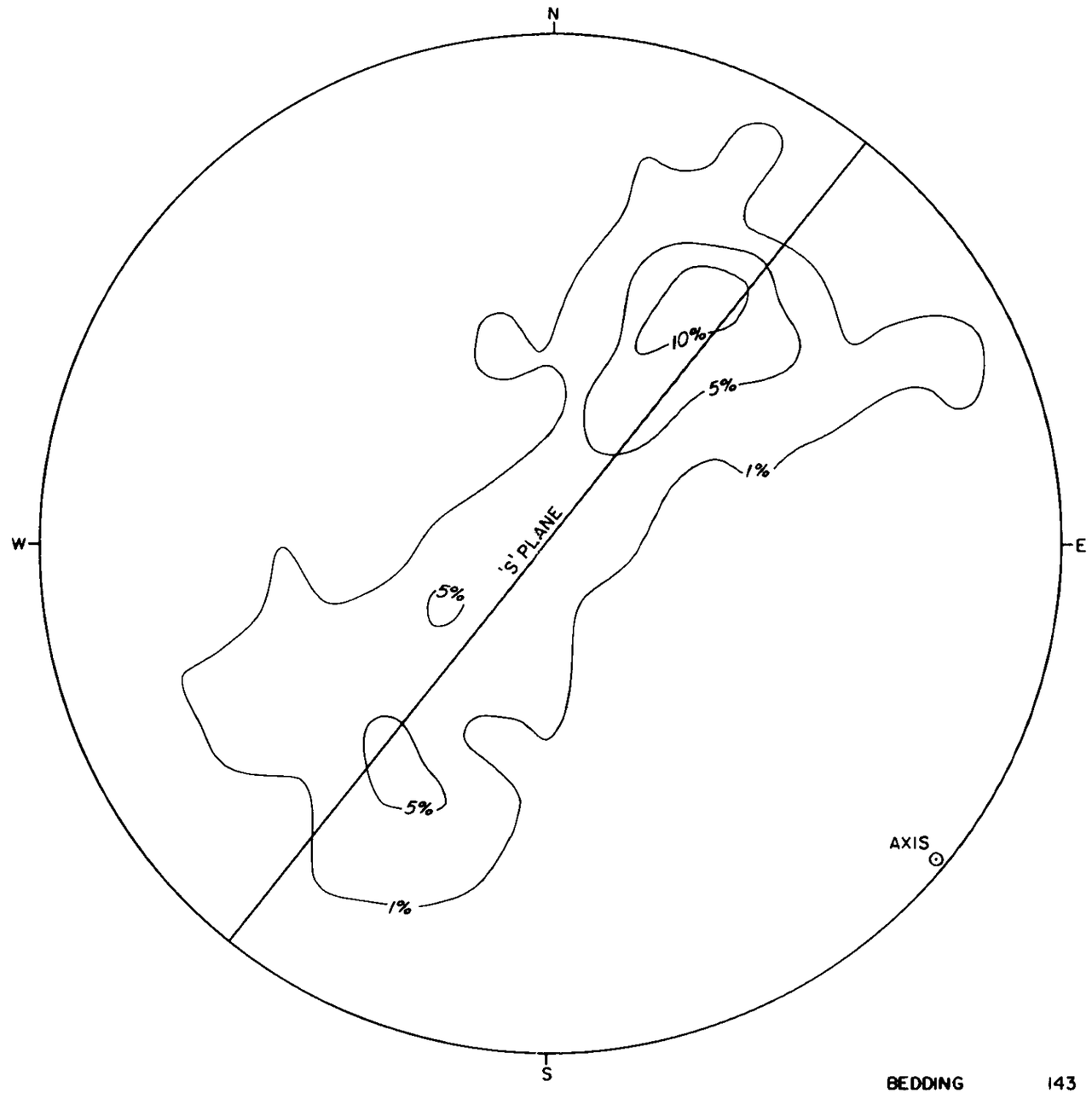
HASLER NORTH SECTION

STEREONET OF POLES TO BEDDING

Figure 45

FEB. 1982

930-8



BEDDING ATTITUDES	143
TREND	128.7
PLUNGE	3.0

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

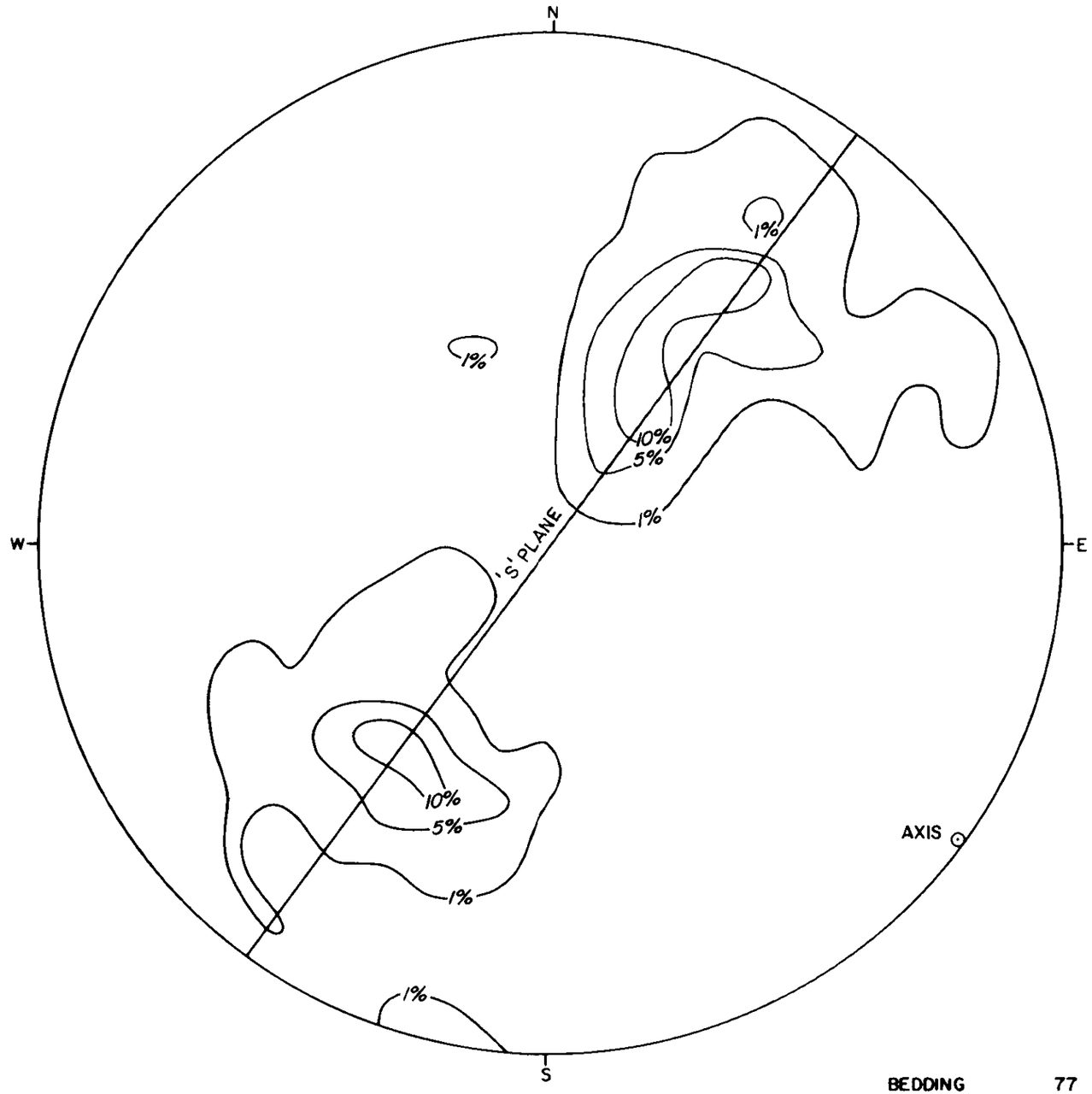
FOLDING CREEK SECTION

STEREONET OF POLES TO BEDDING

Figure 46

FEB. 1982

930-8



BEDDING ATTITUDES	77
TREND	126.9
PLUNGE	0.9

ESSO MINERALS CANADA
COAL DEPARTMENT

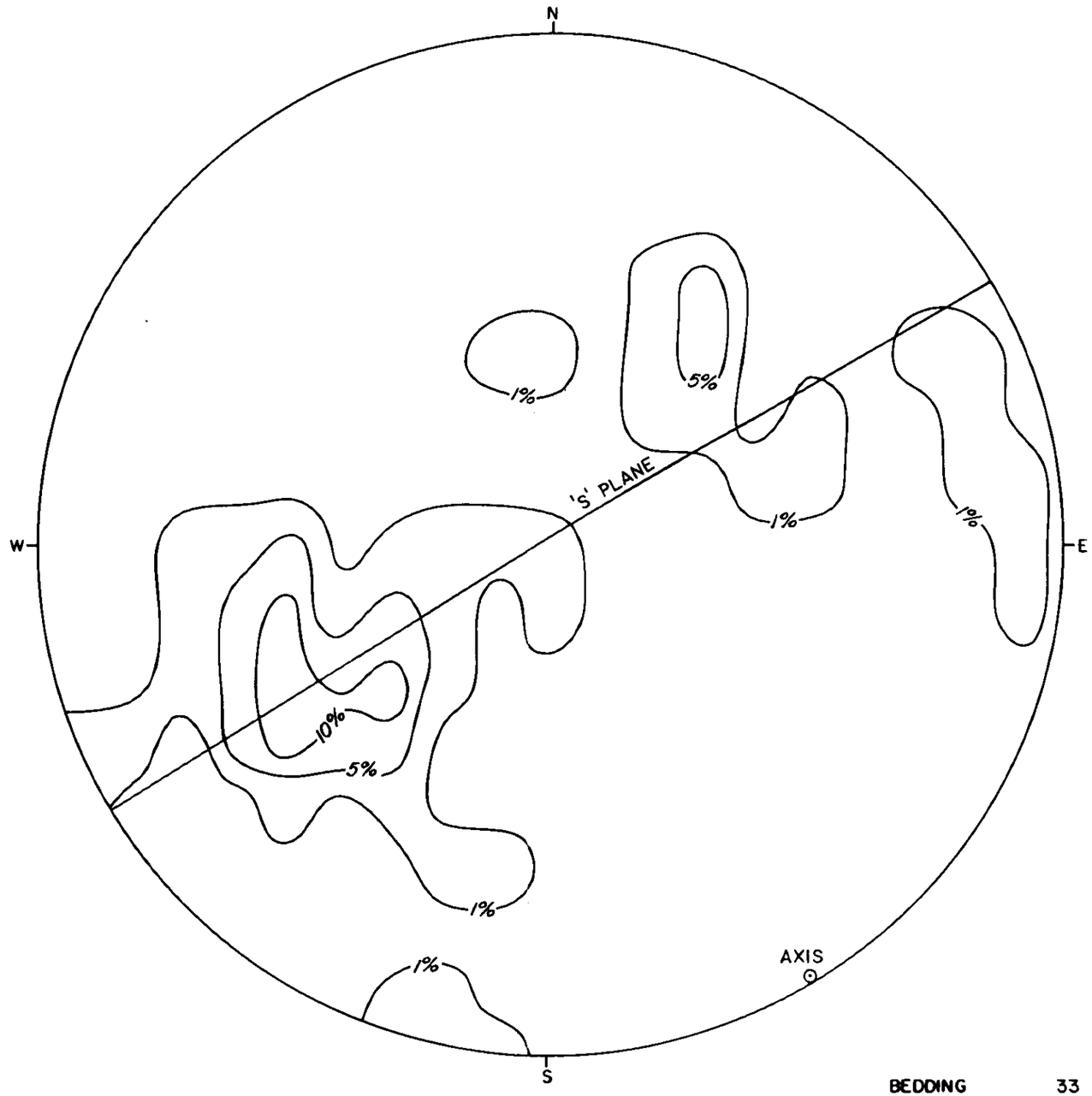
FALLING CREEK

FOLDING STRUCTURE 1

STEREONET OF POLES TO BEDDING

Figure 47

FEB. 1982 930-8



BEDDING ATTITUDES	33
TREND	148.8
PLUNGE	0.8

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

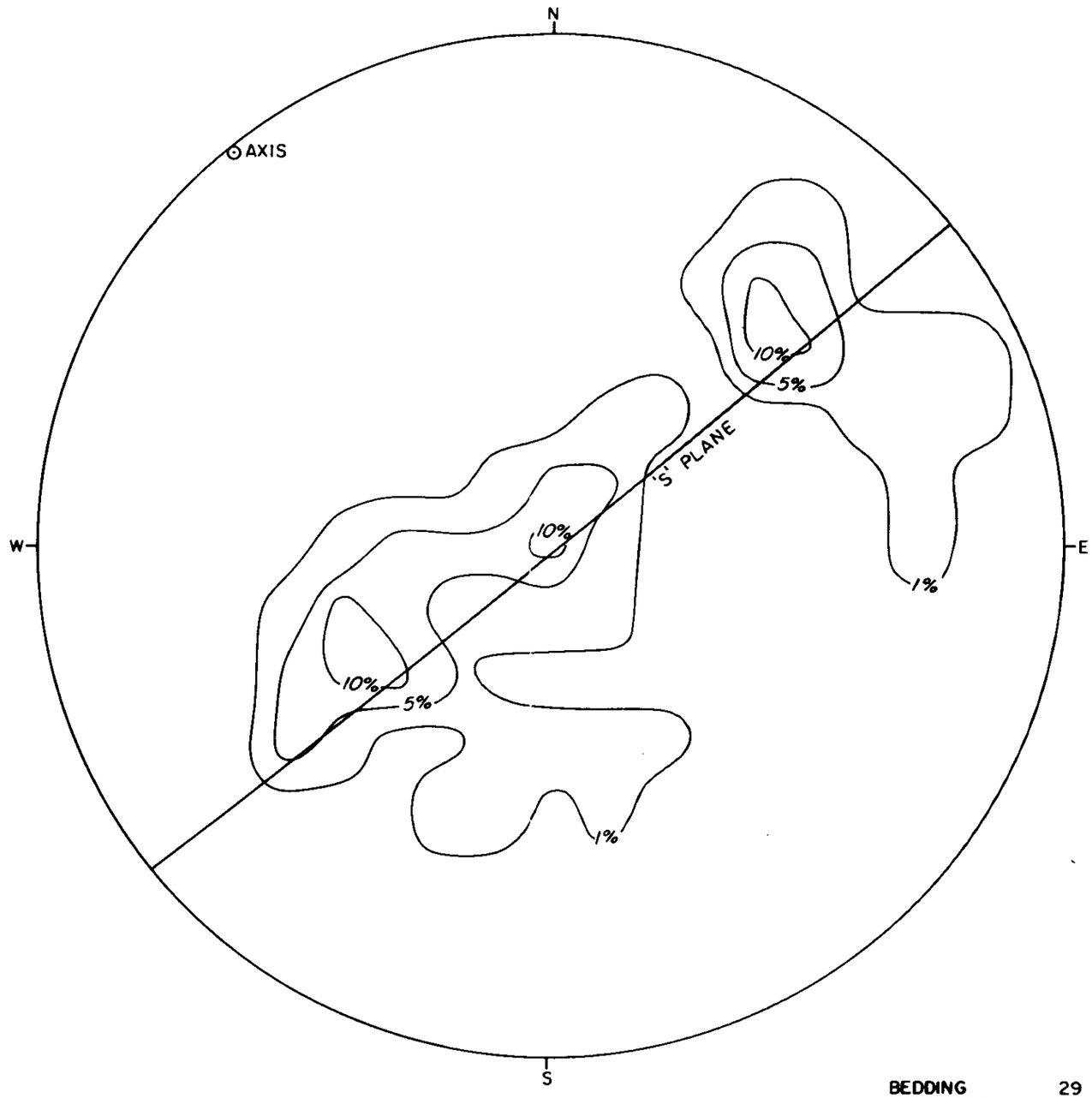
FOREST BURN 'D' SECTION

STEREONET OF POLES TO BEDDING

Figure 48

FEB. 1982

930-8



BEDDING ATTITUDES	29
TREND	320.9
PLUNGE	1.3

ESSO MINERALS CANADA
COAL DEPARTMENT

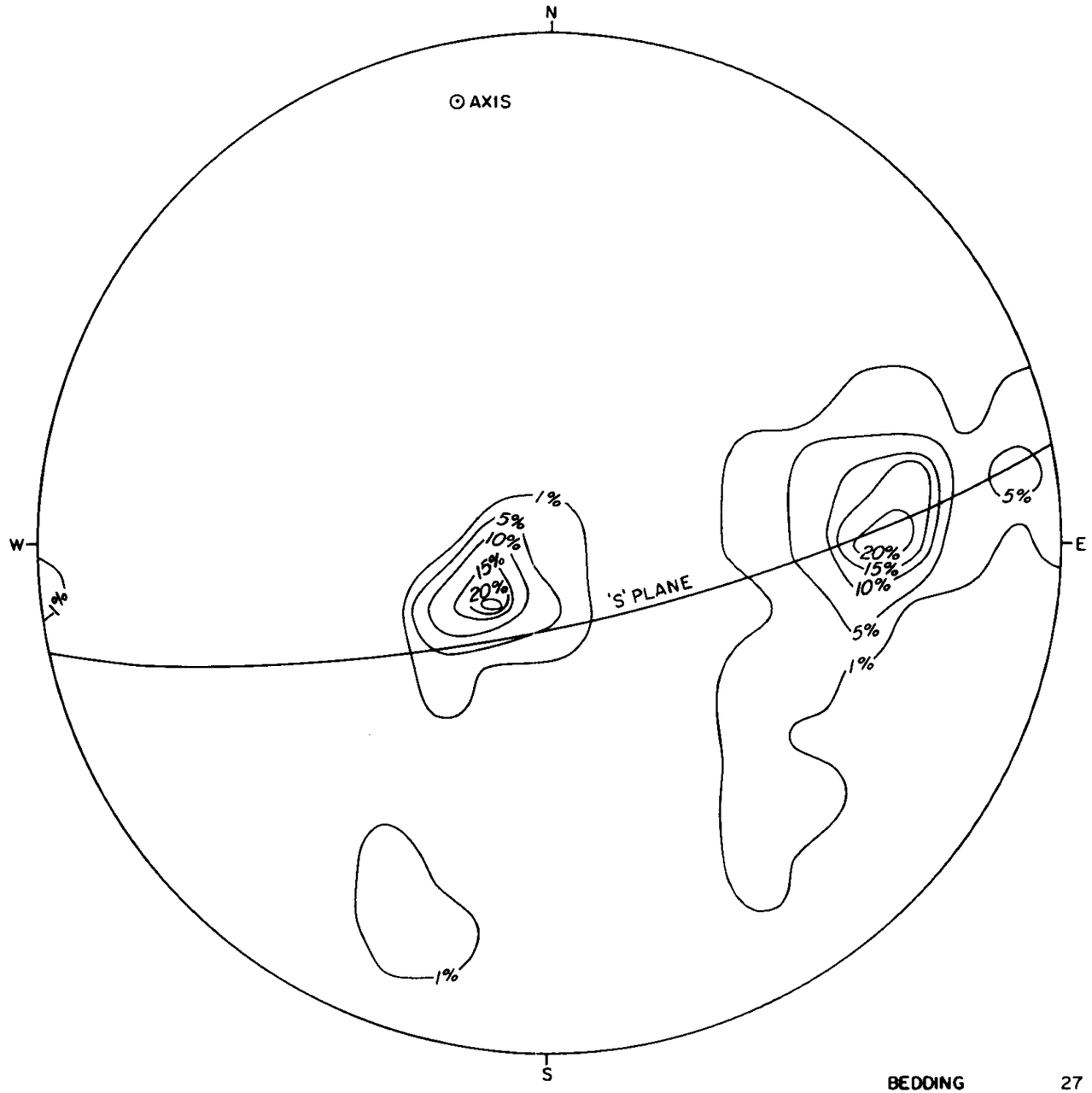
FALLING CREEK

FOREST BURN 'C'

STEREONET OF POLES TO BEDDING

Figure 49

FEB. 1982 930-8



BEDDING ATTITUDES	27
TREND	348.1
PLUNGE	13.1

ESSO MINERALS CANADA
COAL DEPARTMENT

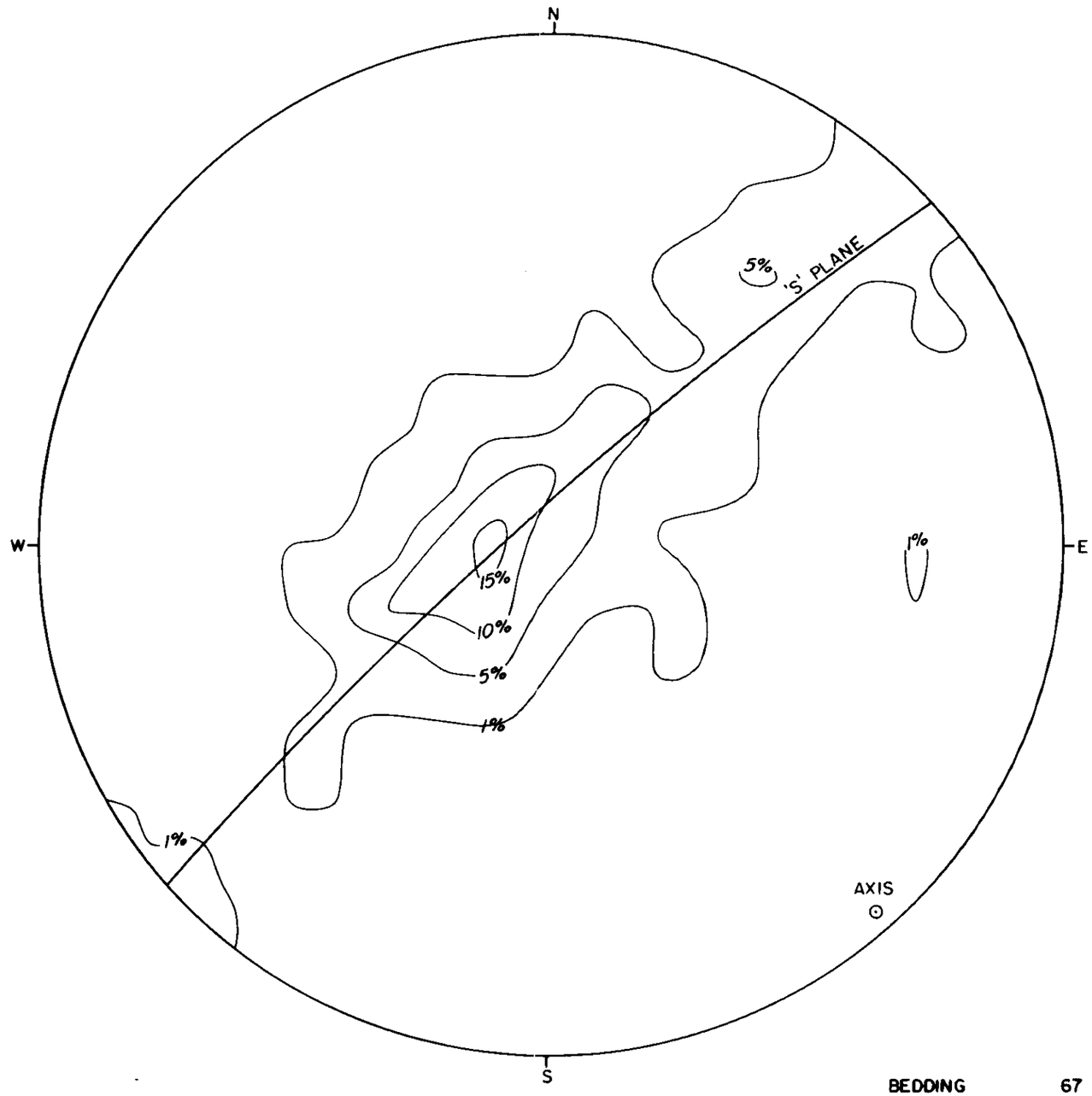
FALLING CREEK

FOREST BURN B_1

STEREONET OF POLES TO BEDDING

Figure 50

FEB. 1982 930-8



BEDDING ATTITUDES	67
TREND	138.5
PLUNGE	4.7

ESSO MINERALS CANADA
COAL DEPARTMENT

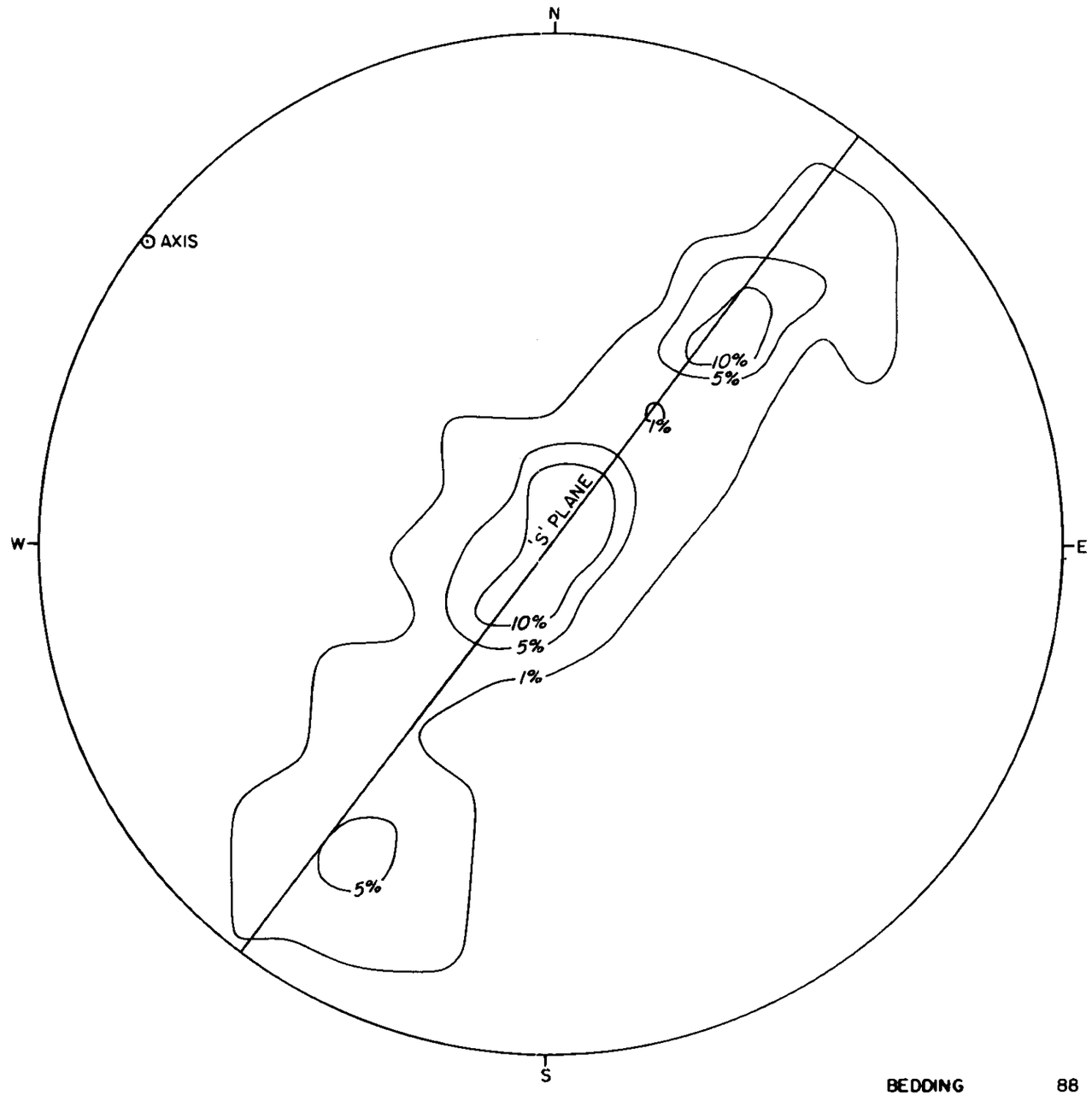
FALLING CREEK

OUR SEISMIC SECTION

STEREONET OF POLES TO BEDDING

Figure 51

FEB. 1982 930-8



BEDDING ATTITUDES	88
TREND	307.3
PLUNGE	0.4

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

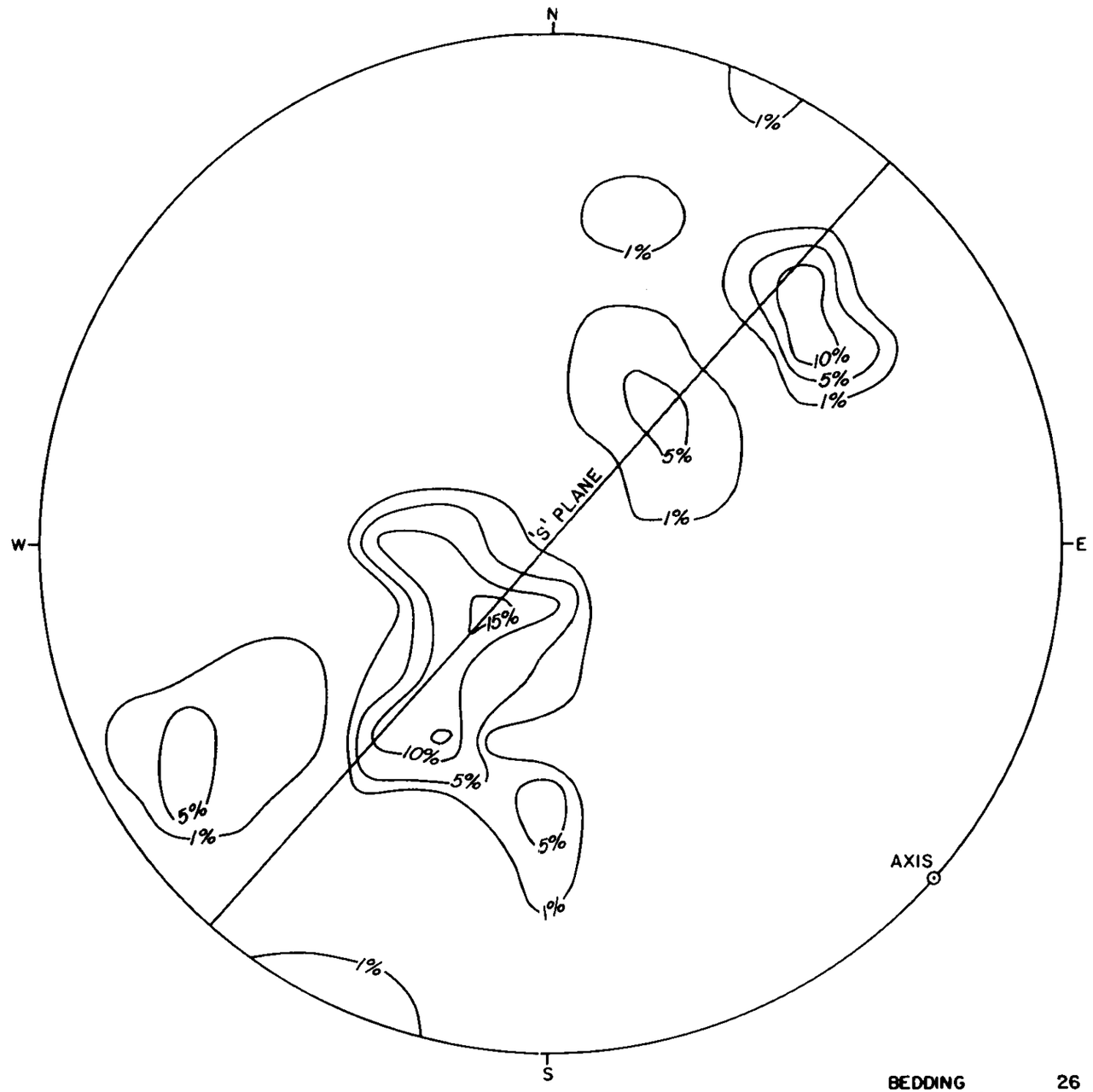
SUSAN CREEK

STEREONET OF POLES TO BEDDING

Figure 52

FEB. 1982

930-8



BEDDING ATTITUDES	26
TREND	131.2
PLUNGE	0.1

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

CHAMBERLAIN CREEK SECTION

STEREONET OF POLES TO BEDDING

Figure 53

FEB. 1982 930-8

3.5 COAL

3.5.1 Introduction

Most accessible coal seams greater than 1 m thick were hand trenched and described in detail (Figure 56). Channel samples were taken for proximate, sulphur, BTU and FSI analyses. Representative samples were also taken for examination of the palynology and vitrinite.

The coal recovered from the three core holes was also described in detail (Figure 57). Due to the generally poor core recovery achieved in the coal intervals only one seam was analysed in any detail (see 81-1 #2 Table 5). This sample is from the Contact Seam which is thought to be from the top part of the Dresser Formation. The rest of the major coal intervals were sent for proximate, sulphur, BTU and FSI analysis (see Table 5).

3.5.2 Proximate Analyses

Proximate analyses were carried out on a number of surface outcrop samples to obtain some measure of the coal quality and rank. Nearly all samples were deeply weathered and oxidized. Sample D014 was exposed in a road cut which was probably made in the mid 1970's. Its high fixed carbon value and unusually high calorific value suggests that it is relatively unaffected by weathering and oxidation. As a result, it is perhaps more representative of the true quality of coal seams on the property. The rank is high; the coal should be placed in the High Volatile A Bituminous rank by reason of its calorific value. In fact, the rank may be higher since the percentages of fixed carbon and volatiles are those of Medium Volatile Bituminous rank. Some degree of oxidation must have occurred during the coal seams exposure to the atmosphere and this may have slightly reduced its thermal qualities.

The H013 and B049 seams again show high rank and they are also thought to have been exposed at the surface relatively recently by road workings.

Nevertheless some variation in rank, as indicated in the analyses, should be expected between different seams.

Of the three core holes drilled, good core recovery was achieved in the Contact Seam of DH 81-1. This was plied on the basis of macroscopic analyses of the core, and each ply was then analysed separately. The two plies containing the purest coal represent 64% of the seam recovered by length and the results from their analyses show very high rank, with BTU values over 14,000, and very low ash percentages. This analysis is judged to be fairly accurate because of the 81.8% total recovery for the seam.

As a comment for all the drill hole analyses, there is little doubt that the pure coal content of the seams is of very high rank. However, many of the seams encountered had numerous partings of dirty coal and carbonaceous mudstone. Any processing of the coal would have to include careful washing, to produce a valuable and marketable product.

None of the Free Swelling tests showed signs of coking qualities in the coal seams sampled (i.e. indices are low). Good coking quality has been reported from the Hasler Creek mine (B.C. Department Railways 1950) and the Noman Creek adits (Brameda Resources, 1969); the possibility of their occurrence on the Falling Creek licenses must not be excluded at this stage in exploration.

3.5.3 Vitrinite Reflectance Analyses

In most cases the brightest coal was sampled for vitrinite reflectance analyses. The analyses were carried out in the Esso Research Laboratories. Though some problems were experienced in

polishing the samples, and in some cases only a mean average reflectance was estimated, the results support those from the proximate analyses (see Table 7).

The Contact Seam from DH 81-1 sample #2, which showed a rank of High Volatile A Bituminous or possibly Medium Volatile Bituminous, had a mean average reflectance of 1.31%. This is estimated to be lower by 0.05-0.15% than the mean maximum reflectance and the coal on this basis would be ranked as Medium to Low Volatile Bituminous. This suggests that the rank estimated from the proximate analyses on cored coal seams, even with good sample recovery, might be on the low side. The vitrinite reflectance results also show how the effects of weathering and oxidation on surface outcrop samples severely lowers their rank and their proximate analyses are not representative of the buried coal. The reflectance of vitrinite itself is usually lowered in coals exposed on the surface. The reflectance values calculated from core samples were consistently higher.

3.5.4 Other Analyses

A number of other analytical procedures, discussed below, were carried out on the Falling Creek coals, largely on a trial basis. Not all the results have been obtained to date and the value of the various tests is hard to judge at this time. Their true value may be demonstrated as exploration continues.

Some early results of these tests are worth noting.

3.5.5 Palynology

Surface oxidation continued to be a problem in outcrop samples. A number of the coal samples were found to comprise coalified drifted wood which did not provide a good supply of spores or pollen, making dating and correlation difficult. Supplying a sample representative of the complete coal seam, when only a fraction is actually examined, is a problem in this type of examination.

3.5.6 Elemental Analysis

At present, spectra and analysis charts indicate that the samples fall generally into two groups, those with a high background elemental count and a high calcium content, and those with a low background count and a low calcium content.

The first group would suggest a coal rich in spores and pollen which probably formed from a peat swamp with a rich variety of vegetation. The one exception might be sample B201 from the headwaters of Judith Creek. This seam outcropped as a thin, uniformly dull lustrous coal, 0.25 m thick, which was exceedingly hard and formed a resistant rib in the associated siltstones. The elemental spectra is similar to those associated with woody material so this is likely to be a coal seam of limited extent formed from driftwood.

The second group show similarities with coals thought to have formed from algal mat accumulations and may represent slightly deeper water conditions or more brackish environments.

A thin coal seam from DH 81-1, known as the High Gamma Seam, was sent for analysis to see if any of the constituents were radioactive. The seam is characterized by a high natural gamma response. Nothing unusual was discovered, however, and it is now thought that the high gamma count is responding to a layer just below the seam and not the coal itself. The seam is of interest since it has some value as a marker horizon.

3.5.7 Seam Correlation

Correlation of surface outcrops has only been possible with a low degree of confidence. As a result of the structural interpretation in the south west portion of the property a tentative correlation chart has been drawn up in order to produce some sort of working model (Figure 27).

Correlation of coal seams between DH 81-1 and 80-1 spaced 375 m apart was good. The correlation is particularly apparent in the Density Logs from the two holes.

All other drill holes on the property are drilled at more than 1 km spacings and more commonly at over 2 km spacings. Correlating coal seams between these is more difficult even when the holes are thought to intersect similar parts of the section. This could be either for reasons of facies changes or equally likely for reasons of structural complexity. Some more drilling at spacings of 500 m or less must be carried out before any sound conclusions can be arrived at about seam continuity. The thickest seams in Drill holes 81-2 and 81-3 are highly parted and this condition will have to be expected elsewhere. Dave's Seam in DH 81-2 is the least parted and has a bench 2.26 m thick, of pure coal in a total seam thickness of 3.78 m (true). The rest is coal and dirty coal with carbonaceous mudstone partings.

According to the structural interpretations so far developed most of the seams encountered in drilling during 1980 and 81 must subcrop on the licenses held by Esso and therefore opportunities to mine them from the surface should exist.

TABLE 5

PROXIMATE ANALYSES

SURFACE OUTCROP AND TRENCH SAMPLES

Raw Coal Analysis, Air Dried Basis

SAMPLE	ADM%	MOIST%	ASH%	VOL%	FC%	S%	C.V. CAL/GM	FSI	MEAN MAX. REFLECTANCE
L075	26.5	3.5	14.1	27.9	54.5	0.20	5,641	-	0.94
B048	11.1	9.5	23.3	21.4	45.8	0.16	4,739	-	0.95
B049 T	6.9	3.4	41.0	18.5	37.1	0.22	3,965	-	0.98
M	6.8	2.4	13.9	22.7	61.0	0.31	6,492	-	1.08
B	9.3	3.0	8.5	23.1	65.4	0.24	6,677	-	1.06
Comp		3.2	25.2	20.1	51.5	0.26	5,381	-	
H075	21.9	3.8	39.2	20.8	36.2	0.35	3,675	-	
D175	24.6	3.7	29.1	23.8	43.4	0.27	4,350	-	0.94
H013	1.5	4.5	14.3	19.1	62.1	0.36	6,285	-	
D014	3.8	0.9	9.6	15.5	74.0	0.52	7,295	-	
B204	15.1	15.5	23.8	22.7	*38.0	0.36	3,926	-	
H074 T	20.5	13.7	18.9	24.0	43.4	0.39	4,475	-	
Upper Seam B	18.1	14.9	20.8	23.5	40.8	0.41	4,202	-	0.93
Comp		14.4	19.9	23.7	42.0	0.40	4,304	-	
H074 Lower Seam	30.2	5.1	24.0	26.4	44.5	0.37	4,519	-	0.99
B062 T	20.0	15.5	27.0	21.3	36.2	0.40	3,785	-	1.04
B	24.1	9.2	41.9	18.9	30.0	0.29	3,032	-	0.96
B059 T	23.0	8.5	15.7	24.1	51.7	0.59	5,244	-	1.32
B	24.9	8.6	19.8	23.6	48.3	0.50	4,866	-	1.36
Comp		9.3	18.4	22.7	49.6	0.53	5,022	-	
Trench 1 #9	18.9	9.2	27.5	22.0	41.3	0.39	4,158	-	0.95
T1#6	22.6	3.7	40.1	20.3	35.9	0.43	3,483	-	1.04
T1#10	17.3	3.3	18.0	22.7	56.0	0.64	5,665	-	1.16

TABLE 5 (Continued)

DH81-2

SEAM NAME	ADM%	MOIST%	ASH%	VOL%	FC%	S%	C.V. CAL/GM	FSI	MEAN MAX. REFLECTANCE	% REC.
BRD	1.9	0.6	7.0	22.6	69.8	0.27	7,843	2	-	40%
Twin	1.7	0.6	9.7	21.3	68.4	0.40	7,608	2 1/2	-	61%
Rat	1.8	0.6	37.0	14.3	48.1	0.51	5,158	1	1.45	56%
Daves	1.7	0.4	13.2	16.2	70.2	0.47	7,362	N.A.	1.26	38%
DH81-3										
Split Seam	1.4	0.7	54.7	14.0	30.6	0.23	-	N.A.	1.38	50%
Lower Seam	1.5	0.7	62.2	12.1	25.0	0.42	-	-	-	67%
@106m									1.24	

CLIENT : ESSO MINERALS CANADA Table 5 (Cont'd)

PROJECT: 81-1-2 (170.4-172.5) Samples Received Nov. 16/81

LAB NO.: 933 INTERVAL Roof

HEAD RAW ANALYSIS

ADM%	MOIST%	ASH%	VOL%	F.C.%	S%	C.V. Cal/gm	F.S.I.	CALC BASIS
0.7	0.9	80.0	7.7	11.4	0.16	-	N.A.	a.d.b.
	1.6	79.4	7.6	11.4	0.16	-	-	a.r.b.
		80.7	7.8	11.5	0.16	-	-	d.b.

SINK-FLOAT ANALYSIS,adb: On Raw Coal Crushed to -3/8"

S.G. FRACTION	WT%	RM%	ASH%	C.V. Cal/gm	F.S.I.	CUMULATIVE WT%	CUMULATIVE ASH%
- 1.45	1.6	0.9	4.0	8207	3	1.6	4.0
1.45- 1.60	nil	-	-	-	-	-	-
1.60- 1.80	nil	-	-	-	-	-	-
+1.80	98.4	0.9	81.2	-	-	100.0	80.0

LAB NO. 934 INTERVAL Top 35 cm of Seam

HEAD RAW ANALYSIS

ADM%	MOIST%	ASH%	VOL%	F.C.%	S%	C.V. Cal/gm	F.S.I.	CALC. BASIS
0.7	0.6	37.7	12.7	49.0	0.38	4980	1	a.d.b.
	1.3	37.4	12.6	48.7	0.38	4945	-	a.r.b.
		37.9	12.8	49.3	0.38	5010	-	d.b.

SINK-FLOAT ANALYSIS,a.d.b.: On Raw Coal Crushed to -3/8"

S.G. FRACTION	WT%	RM%	ASH%	C.V. Cal/gm	F.S.I.	CUMULATIVE WT%	CUMULATIVE ASH%
- 1.45	13.1	1.3	10.9	7510	1 1/2	13.1	10.9
1.45 - 1.60	34.7	0.8	23.4	6336	1	47.8	20.0
1.60 - 1.80	21.6	0.9	41.4	4625	1/2	69.4	26.6
+1.80	30.6	0.9	63.7	-	-	100.0	38.0

CLIENT : ESSO MINERALS CANADA Table 5 (Cont'd)

PROJECT: 81-1-2 (170.4-172.5) Samples Received Nov. 16/81

LAB NO.: 935 INTERVAL 35-98 cm

HEAD RAW ANALYSIS

ADM%	MOIST%	ASH%	VOL%	F.C.%	S%	C.V. Cal/gm	F.S.I.	CALC BASIS
0.2	0.7	10.2	15.2	73.9	0.61	7607	1 1/2	a.d.b.
	0.9	10.2	15.2	73.7	0.61	7592	-	a.r.b.
		10.3	15.3	74.4	0.61	7661	-	d.b.

SINK-FLOAT ANALYSIS,adb: On Raw Coal Crushed to -3/8"

S.G. FRACTION	WT%	RM%	ASH%	C.V. Cal/gm	F.S.I.	CUMULATIVE WT%	CUMULATIVE ASH%
- 1.45	88.2	0.6	8.0	7868	1 1/2	88.2	8.0
1.45- 1.60	5.8	0.9	18.6	6760	1	94.0	8.7
1.60- 1.80	4.0	1.0	38.4	4853	1/2	98.0	9.9
+1.80	2.0	1.5	56.4	-	-	100.0	10.8

LAB NO. 936 INTERVAL 98-183 cm

HEAD RAW ANALYSIS

ADM%	MOIST%	ASH%	VOL%	F.C.%	S%	C.V. Cal/gm	F.S.I.	CALC. BASIS
0.5	1.1	4.1	14.5	80.3	0.56	8184	N.A.	a.d.b.
	1.6	4.1	14.4	79.9	0.56	8143	-	a.r.b.
		4.1	14.7	81.2	0.57	8275	-	d.b.

SINK-FLOAT ANALYSIS,a.d.b.: On Raw Coal Crushed to -3/8"

S.G. FRACTION	WT%	RM%	ASH%	C.V. Cal/gm	F.S.I.	CUMULATIVE WT%	CUMULATIVE ASH%
- 1.45	98.1	0.7	3.6	8264	1/2	98.1	3.6
1.45 - 1.60	1.9	0.8	20.6	6558	1/2	100.0	3.9
1.60 - 1.80	nil	-	-	-	-	-	-
+1.80	nil	-	-	-	-	-	-

CLIENT : ESSO MINERALS CANADA Table 5 (Cont'd)

PROJECT: 81-1-2 (170.4-172.5) Samples Received Nov. 16/81

LAB NO.: 937 INTERVAL 183-210 cm

HEAD RAW ANALYSIS

ADM%	MOIST%	ASH%	VOL%	F.C.%	S%	C.V. Cal/gm	F.S.I.	CALC BASIS
1.7	0.6	79.1	6.6	13.7	0.22	-	N.A.	a.d.b.
	2.3	77.8	6.5	13.4	0.22	-	-	a.r.b.
		79.6	6.6	13.8	0.22	-	-	d.b.

SINK-FLOAT ANALYSIS,adb: On Raw Coal Crushed to -3/8"

S.G. FRACTION	WT%	RM%	ASH%	C.V. Cal/gm	F.S.I.	CUMULATIVE WT%	CUMULATIVE ASH%
- 1.45	3.5	1.5	7.1	7855	2 1/2	3.5	7.1
1.45- 1.60	2.8	1.3	22.7	6413	1 1/2	6.3	14.0
1.60- 1.80	3.4	1.5	39.1	4849	N.A.	9.7	22.8
+1.80	90.3	0.8	85.3	-	-	100.0	79.2

LAB NO. 938 INTERVAL Floor

HEAD RAW ANALYSIS

ADM%	MOIST%	ASH%	VOL%	F.C.%	S%	C.V. Cal/gm	F.S.I.	CALC. BASIS
0.6	0.6	89.9	4.8	4.7	0.06	-	1	a.d.b.
	1.2	89.4	4.8	4.6	0.06	-	-	a.r.b.
		90.4	4.8	4.8	0.06	-	-	d.b.

SINK-FLOAT ANALYSIS,a.d.b.: On Raw Coal Crushed to -3/8"

S.G. FRACTION	WT%	RM%	ASH%	C.V. Cal/gm	F.S.I.	CUMULATIVE WT%	CUMULATIVE ASH%
- 1.45	2.2	0.7	4.0	8337	4 1/2	2.2	4.0
1.45 - 1.60	nil	-	-	-	-	-	-
1.60 - 1.80	0.6	0.8	44.3	4602	1	2.8	12.6
+1.80	97.2	0.5	92.3	-	N.A.	100.0	90.1

FIGURE 27

FALLING CREEK STRATIGRAPHIC ORDER OF SELECTED COAL SEAMS

81-3	FOREST BURN AREA	81-2	FOLDING CREEK AREA	81-1 & 80-1	EXPOSURE CREEK AREA
			B049		
			Brenda Seams B048		
		BRD Seam----------	T2 #5		
	B021, 23 & 24	---------?----------	T2 seams		
			H049 ? H041		
			D047 ? H014		H089
					? H075
					? Lady Di D175
		Twin Seam ? ----------	H013----------	-------?---------	? Seven Sisters B204-210
Split Seam					
					B119
					H074---?---B121
	H009				
					B061
					62
		Dave's Seam	----------	-Dave's Seam-------	Daves Seam D105
					T.#9
					B059
		Rat Seam		Pick #1	
				High Gamma	
				Contact Seam ?	B073, B083

TABLE 6
Summary of Coal Seam Descriptions

Seam	Location UTM East	North	(M) Elevation	Strat. Position	Thickness (metres) Gross	Net	Partings	Mineralization	Roof	Floor	Comments
B021	61198	41435	1170		.73	.73			Carb. mdst & sst	v. carb. mdst	
B023	61195	41425	1168		1.17	1.17			mdst	mdst	brightly banded
B024	61130	41500	1173		1.2	1.2			carb. mdst	carb. mdst	
B036	60630	42157	1177		.91	.86	sst.		sltst.	m. gr. carb sst.	
B045	60776	42373	1141		.82	.82			sltst. mdst	mdst	dull, dirty muddy coal
B048	60320	42328	1188		2.35	1.62	v. carb mdst		v.f.gr. sst	carb sltst	
B049	60309	42302	1193		4.41	3.45	bentonite mdst		obsc.	carb. mdst sltst.	
B059	59709	44234	1201		3.6	3.6			v.f.gr. sst	carb. mdst	
B062	59466	44255	1176		2.8	2.8			obsc.	obsc.	
B073	59136	44055	1190		1.83	1.44	mdst		mdst	carb. mdst	dull banded
B083	59089	43940	1188		1.88	.93	mdst		obsc.	carb. mdst	

Summary of Coal Seam Descriptions

Seam	Location UTM East	North	(M) Elevation	Strat. Position	Thickness (metres) Gross	Net	Partings	Mineralization	Roof	Floor	Comments
B119	58770	43765	1160		1.0	1.0					may not be in place
B121	58810	43845	1155		1.9	1.9			obsc.	obsc.	dull-muddy powered coal
B122	58810	43865	1155		1.5	1.5			obsc	obsc.	may be same as (B121)
B204	59215	44780	1140		4.0	4.0			f.gr. sst	obsc.	dull, with bright band
B205	59220	44790	1140		1.56	1.56	mdst cw carb.strgrs		obsc	carb. mdst	dull with bright band
B206	59215	44800	1140		2.24	1.99	carb. mdst		obsc	v. carb. mdst	dull with bright band
B207	59220	44810	1140		.65	65			carb. mdst	carb. sst.	dull with bright band
B208	59225	44815	1140		.76	.76			carb. mdst	carb. mdst	dull with bright band
B209	59225	44820	1140		2.46	2.11	carb. mdst		obsc.	obsc.	bright & dull bands
B210	59225	44830	1140		2.27	1.48	mdst		obsc.	carb. mdst	dull with bright band
B283	59645	47340	1260		1.2	1.2			obsc.	sltst.	dull

Summary of Coal Seam Descriptions

Seam	Location UTM East	Location UTM North	(M) Elevation	Strat. Position	Thickness (metres) Gross	Thickness (metres) Net	Partings	Mineralization	Roof	Floor	Comments
D014	60565	44515	1055		2.11	2.11			mdst	v. carb. mdst	dull
D047	60270	41655	1271		.6	.6			obsc.	sltst.	dull
D097	59440	44685	1065		1.84	1.84					
D133	59480	44796	0957		2.06	1.76	mdst			coal	
D175	58680	45335	1155		3.5	2.28			obsc.	obsc.	dull
H009	63110	39780	1143		1.2	1.09	mdst carb. sst & sltst.		carb. mdst	mdst	
Seam 1a H013	60887	42488	1130		.56	.56			mdst	mdst	mostly bright
Seam 1b H013	60888	42490	1130		.50	.25	boney coal		carb. mdst	carb. mdst	dull, trans to carb. mdst
Seam 1c H013	60891	42505	1130		3.0	3.0			carb. mdst	carb. mdst	sample taken
Seam 2 H013	60891	42515	1132		.7	.7			carb. mdst	sltst.	dull top bright bottom
Seam 3 H013	60891	42520	1132		4.96	2.58	mdst & boney coal		carb. mdst	sltst.	

Summary of Coal Seam Descriptions (Surface)

Seam	Location UTM East	North	(M) Elevation	Strat. Position	Thickness (metres) Gross	Net	Partings	Mineralization	Roof	Floor	Comments
H014	60840	42555	1158		3.0	3.0			most	most	
H033	60041	40467	1351		1.6	1.6			carb. most	carb. most	
H035	60000	40389	1367		2.7	2.7			sst.	obsc.	
H041	60515	42605	1200		1.6	1.6			carb. most	most	top bright bottom dirty
H049	60325	41840	1220		.85	.75	boney coal		mdst	mdst	mostly bright
H052	59995	42975	1325		.7	.7	mdst		mdst	carb. mdst	
H074	59100	43670	1208		3.7	1.7	carb. mdst		f.gr. sst	obsc	deeply weathered mostly bright
H075	59205	43449	1295		3.79	1.8	carb. mdst		obsc.	carb. mdst	deeply weathered mostly bright
H092	58630	42960	1285		1.5	.9	carb. mdst		sst.	carb. most	appears structurally deformed
L052	55710	46992	1278								
L075	60225	42215	1220		1.6	1.69	mdst carb. sst & sltst		obsc.	obsc.	possibly same as (B049)

3.5.8 Reserves

Table 7 shows a listing of coal intervals over 1 m thick (using calculated true thicknesses) in the three EMC drill holes completed in the 1981 field season. They each intersected between 260 and 280 m of stratigraphic section, and together this represents about 450 m of the coal measures.

TABLE 7

DH 81-1: Contact Seam using dipmeter information and dip of 27° = 2.06 m

		TT m			TT m
DH 81-2:	BRD Seam	3.23	DH 81-3:	@ 54 m	1.14
	@ 38 m	1.90		@ 86 m	1.58
	Twin Seam	4.72		@ 105 m	1.20
	@ 128	1.00		Split Seam	7.27
	@ 139 m	1.64		@ 153 m	1.80
	@ 144 m	1.26		@ 161 m	4.56
	Dave's Seam	3.62		TOTAL =	17.55
	RAT SEAM	2.63			
	TOTAL =	20.00 m			

The average total coal interval from the coal measures intersected by DH 81-2 and 81-3 is equal to 18.77 m. The two holes are thought to be from a similar part of the stratigraphic section. If the seam from DH 81-1 is added (from a lower part of the section) it gives a total coal seam thickness of 20.83 m for the targeted coal measures underlying the south west portion of the property (Figure 54).

The surface area underlain by targeted coal measures in this portion is estimated at 28.25×10^6 m^2. If all of this area is underlain by the entire section represented in DH's 81-1, 81-2 and 81-3 then the reserves can be calculated as follows:

$$28.25\ m^2 \times 20.83\ m \times 10^6 = 588{,}447{,}500\ m^3$$
$$588{,}447{,}500 \times 1.5\ g/cc = 882{,}671{,}250\ \text{tonnes}$$

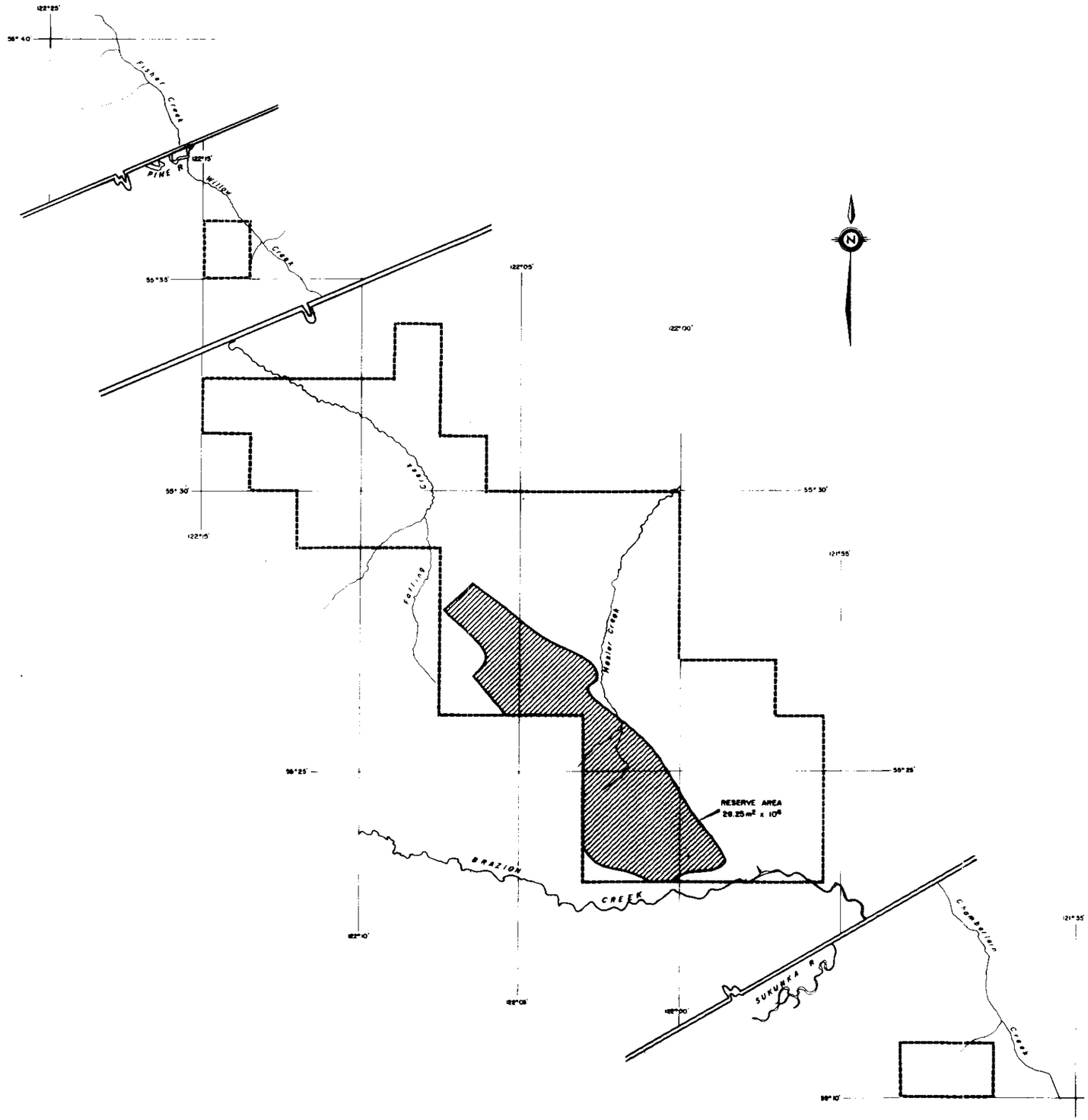
In an attempt to account for the structures present, a more realistic figure might be arrived at by estimating that one quarter of the area has all the coal, one quarter has 3/4 of the total, one quarter 1/2 of the total and the remainder only 1/4 of the total coal which gives a new total of 551,552,365 tonnes. This figure has, however, little meaning since the coal seams are not evenly distributed through the section but it must suffice as a more conservative estimate for the present.

No serious attempt can be made at estimating the reserves for the remainder of the property since the geology is too poorly understood. However, a similar sized area in the north of the property is thought to be underlain by the same stratigraphic interval of the coal measures and so the estimates above can be comfortably doubled to give a realistic figure for the total reserves in the main body of licences.

The figure of 12 million tonnes arrived at for the Willow Creek license in the 1980 report is certainly conservative. The mapping in 1981 indicated that the complete coal measures section is present under the license. Using a similar formula to that used for the main body of licenses, 56,984,490 tonnes is calculated.

The estimated reserves for the Chamberlain Creek licenses remain unchanged at 11 million tonnes.

Note: Three licenses on the east side of Willow Creek are underlain by the same coal measures section as that held by EMC. It is estimated by those working the area that there are 30 million tonnes of recoverable coal on these three licenses. Using our figures, the reserves for the licenses could be calculated as 168 million tonnes which suggests that as much as 18% is recoverable. If this is the situation on our Willow Creek license, 15 million tonnes of coal is recoverable on this license alone.



ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

CALCULATED RESERVE AREA

Figure 54

MARCH 1982 930/8

4.0 RECOMMENDATIONS

It is not recommended to drop any of the licenses presently held.

Exploration should concentrate on the Gething Formation. Only one seam at the top of the Dresser is of interest while the Brenot is largely barren within the property boundary. Mapping suggests that large portions of the northern licences in the Falling Creek area are underlain by the Gething Formation. It is recommended that a road be built across this area in such a manner that trenching can be carried out along its length to expose the underlying strata. From this information a drilling program can be planned using the road for a main access line. This program may consist of two or three deep core holes, (to understand the stratigraphy, and to calibrate the geophysical log data) and a large number of fill in open holes with further coring where necessary. The open hole drilling should be carried out with a hammer drill since some of the sandstones severely reduce penetration rates with a rotary bit.

In the southern portion of the main body of licenses fill in open hole drilling is recommended to trace the coal seams mapped at the surface, and intersected by the existing drill holes including DH 75-3. This program would utilize existing logging roads and seismic lines and extend them only where necessary. More core holes would be planned as information is gathered from the open hole drilling. Extensive trenching should be carried out along all lines of access.

The possibility of tracing coal seam subcrop with a portable drill such as a Winkie drill should be examined. Both core and basic geophysical data may be obtained by this method. The area surrounding DH 75-3 would be particularly suited to this kind of exploration.

Surface resistivity surveys might also be considered.

On the Willow Creek license trenching should be carried out along existing seismic lines and a small drill program should then be planned using the information obtained.

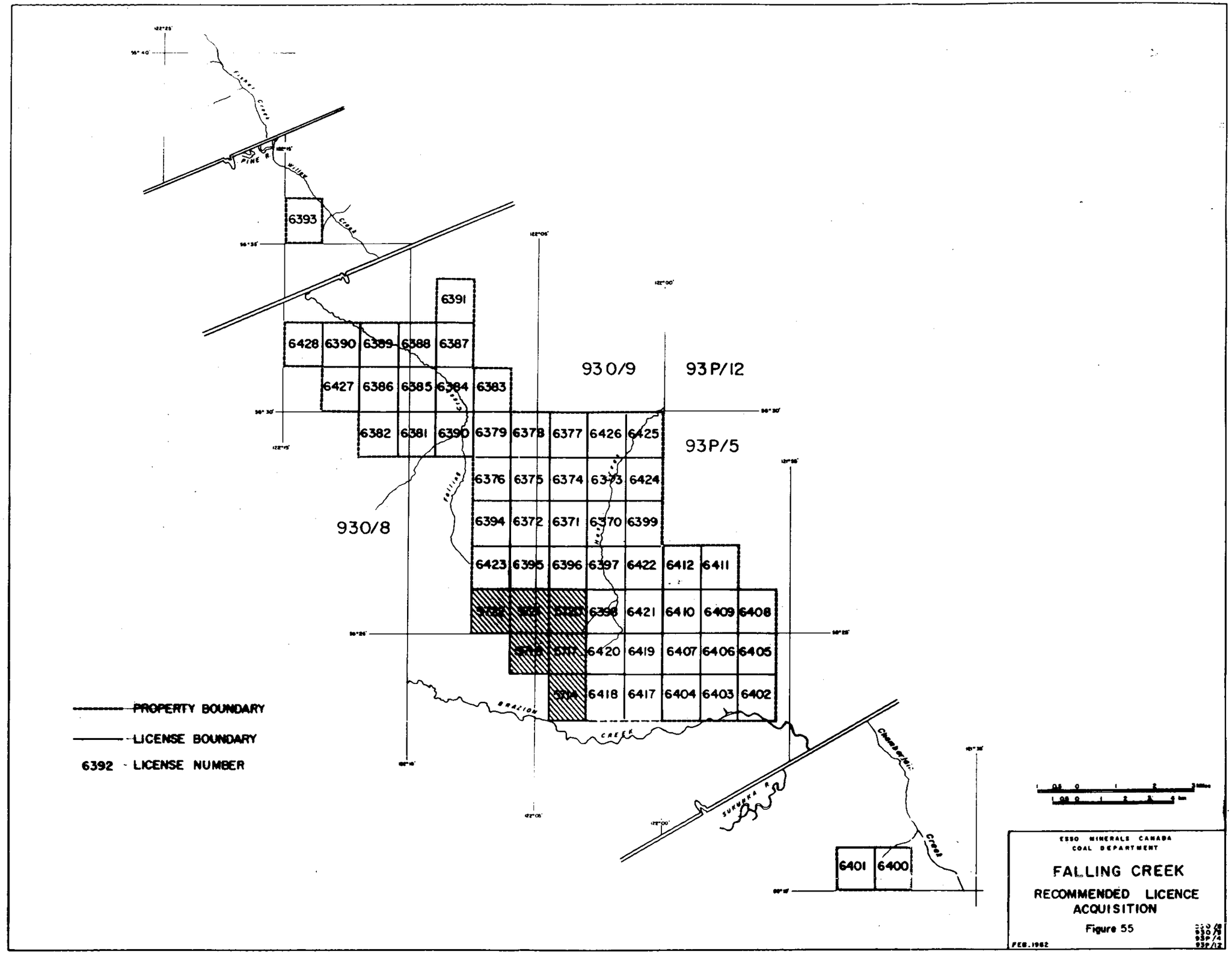
The Chamberlain Creek licenses should be mapped in more detail before a decision is made to either drop them, or to explore further by trenching and drilling.

To complete the above program, expenditures between 2 and 3 million dollars would be required.

If the sums available were to satisfy work commitment regulations only, it is recommended that just the work in the southern portion of the main license body be carried out. This is the only area where small sums of money will upgrade our present level of exploration.

Programs must be planned with a view to grouping the licenses at the end of 1982. The rentals will double on each license in 1983.

The acquisition of licenses numbered 5714, 5717, 5718 and 5720 through 5722 is recommended should they come available. The addition of these licenses may greatly increase the reserve area in the southern portion of the property (Figure 55).


6393
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6427 6386 6385 6384 6383
6382 6381 6380 6379 6378 6377 6426 6425
6376 6375 6374 6373 6424
6394 6372 6371 6370 6399
6423 6395 6396 6397 6422 6412 6411
6398 6421 6410 6409 6408
6420 6419 6407 6406 6405
6418 6417 6404 6403 6402
6401 6400
93 O/9
93 P/12
93P/5
930/8
PROPERTY BOUNDARY
LICENSE BOUNDARY
6392 - LICENSE NUMBER
ESSO MINERALS CANADA
COAL DEPARTMENT
FALLING CREEK
RECOMMENDED LICENCE ACQUISITION
Figure 55
FEB. 1982

5.0 COSTS

TABLE 8

FALLING CREEK
COST INCURRED
1981

ACTIVITY	VENDOR		AMOUNT
Logging	BPB Instruments		5,263.00
Drilling	DW Coates	268.20	
		65,148.41	
		28,976.36	
		8,541.05	102,934.02
Clean Up	Peace Dozing & Contracting		18,533.75
Travel	Employee Accomodation, Meals and Transport		12,254.16
Non-Capital Equipment	Ribtor Mft. & Distr. Co.	1,777.50	
	Chetwynd Motors	1,221.66	
	Caldraft	1,410.48	
	Canadian Marconi	900.68	
	Graphic Controls	68.30	5,378.62
Equipment Repairs	Canadian Marconi		110.00
Fuel	Chetwynd Motors		1,437.60
Hotel Accomodations	Pine Cone Motor Inn		20,307.48
Communications	Alberta Gov't Telephone		1,041.63
Gen. Comp. & Studies	Graphic Controls		31.80
Vehicle Rentals	Econo Car - Agro		10,072.50
Helicopter	Highland Helicopter	15,206.48	
	Okanagan Helicopter	1,342.60	
	Rotortech Helicopter	602.87	17,151.77
Trucking	Gallant Trucking	9,200.00	
	Canadian Freightways	69.37	
	Scoanberg Bros.	280.00	
	O.E. Gerstel Transport	860.00	10,409.37
Geological Consultant	J.E. Hughes Consulting Geologist		1,675.03
Maps & Reports	Province of B.C.	12.50	
	Energy Mines & Res. Cda.	76.70	
	Carter Mapping	27.50	116.70

TABLE 8 (Cont'd)

FALLING CREEK
COST INCURRED
1981

ACTIVITY	VENDOR	AMOUNT
Salaries, Wages and Benefits		77,744.60
TOTAL DIRECT EXPENDITURES		$284,442.66
20% Office Overhead		56,888.53
TOTAL EXPENDITURES		$341,331.19

6.0 CONCLUSIONS

General Geology:

The geology of the area is complex. The least structurally complex part is in the southwest.

Coal Geology:

The thickest and most frequent coal occurrences are in the Gething Formation; that is, the top 500 m of the Crassier Group. Most of the seams in this part of the section subcrop on the property. Between six and ten seams over 1 m thick are present. At least three of them are over 3 m thick. Those greater than 4 m thick intersected by drilling had many partings.

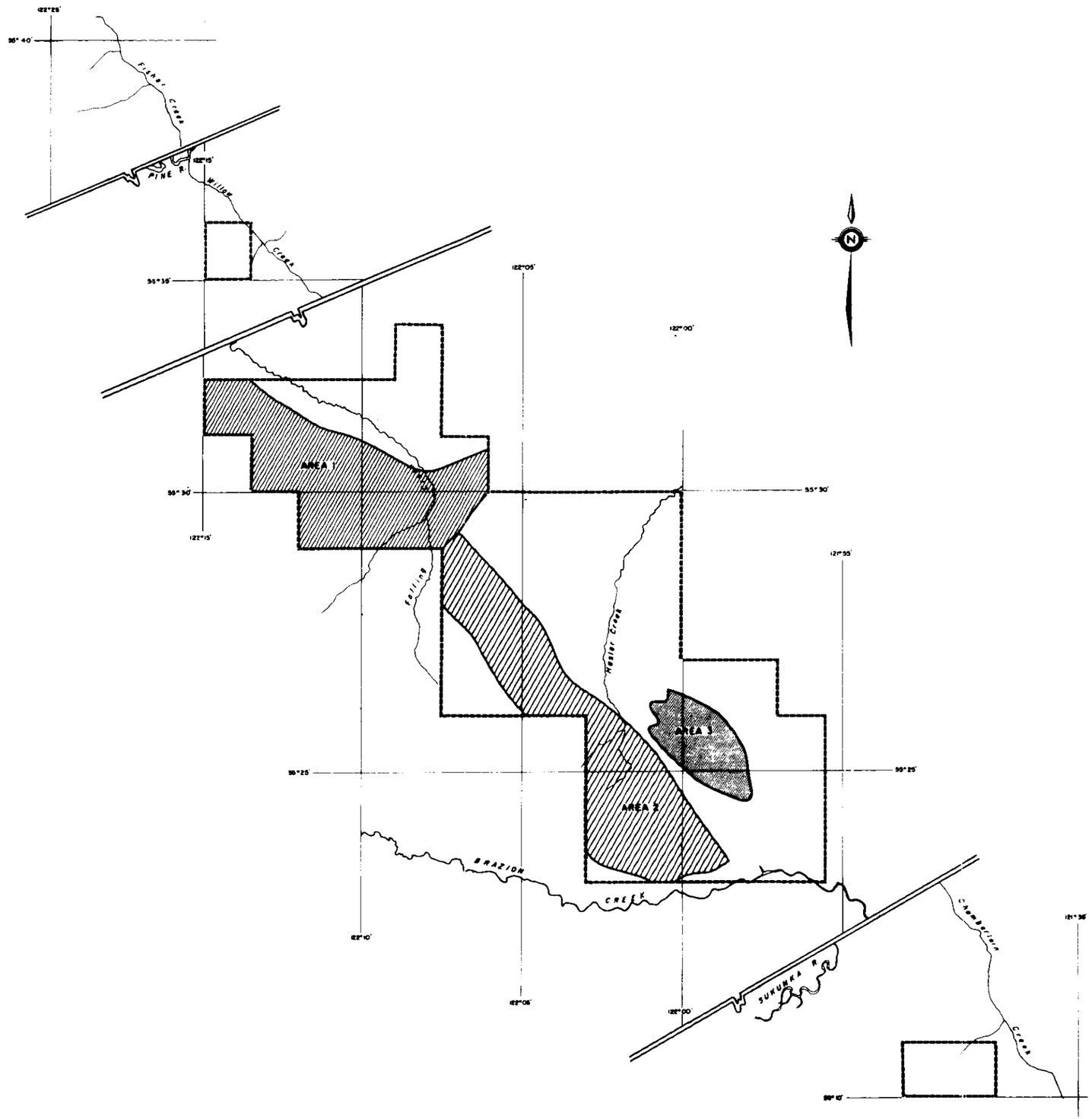
The coal is of high thermal quality, ranging from High Volatile Bituminous A to Low Volatile Bituminous in rank. Some seams may have metallurgical properties.

Coal Reserves:

These are substantial, but recoverable reserves are expected to be modest. Large sums of money will have to be spent on exploration in order to define any recoverable coal.

Exploration

There are three target areas. These must be drilled to obtain further information (Figure 58).



ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

EXPLORATION TARGET AREAS

Figure 58

MARCH 1982 850/6

7.0 REFERENCES

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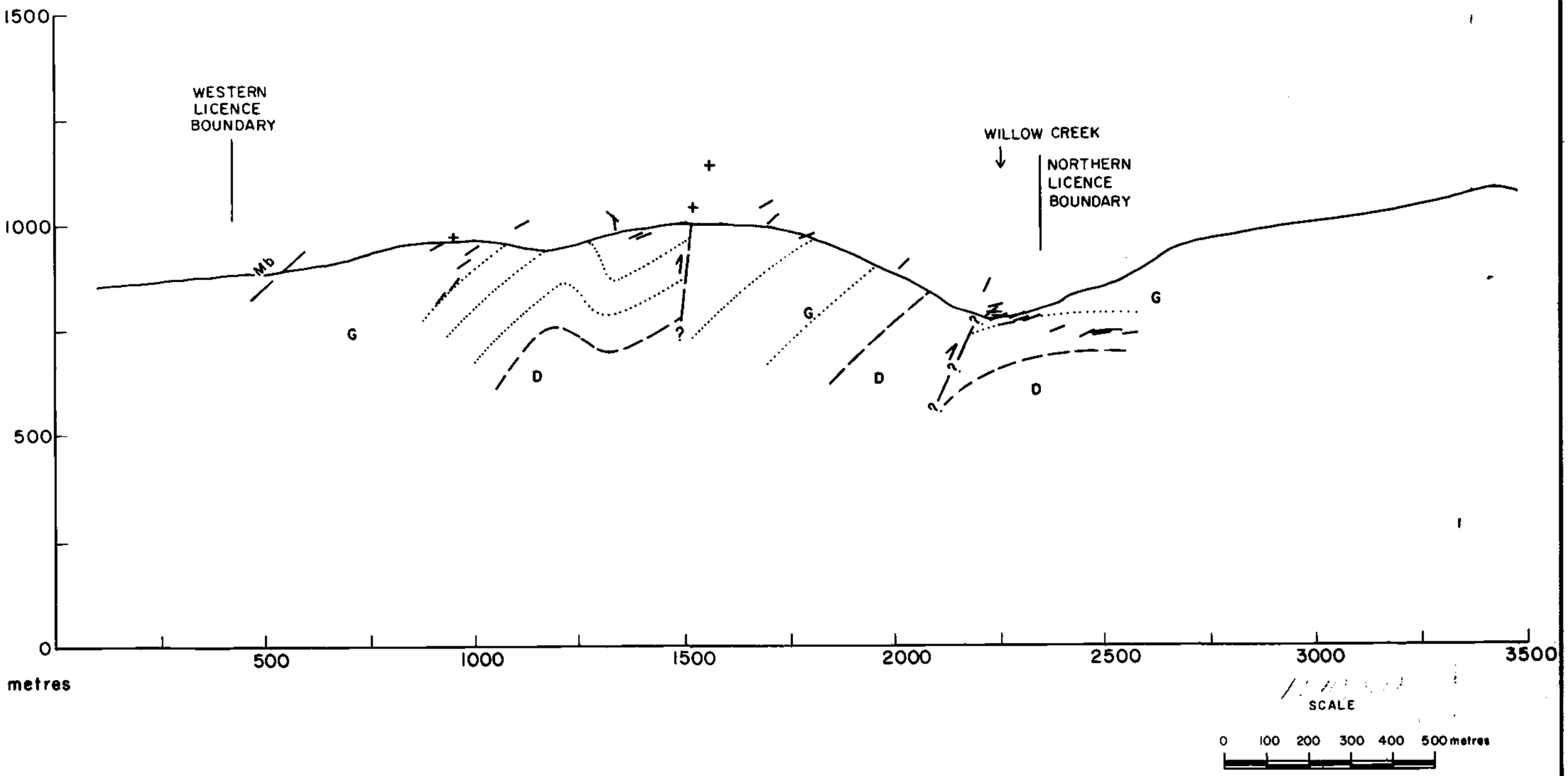


—?—?—	FAULT INFERRED	?	UNKNOWN PROJECTION	Mb	MOOSEBAR
—⇒—	FAULT WITH DIRECTION OF THROW	/	APPARENT DIP SYMBOL	G	GETHING
— — —	INFERRED FORMATION CONTACT	+	OUTCROP WITHOUT DIP MEASUREMENT	D	DRESSER
·····	FORM LINE				

ORIGIN OF PROFILE HAS MAP COORDINATES 47000.060000.0 0.0
PROFILE LOOKING IN DIRECTION 315.0 0.0

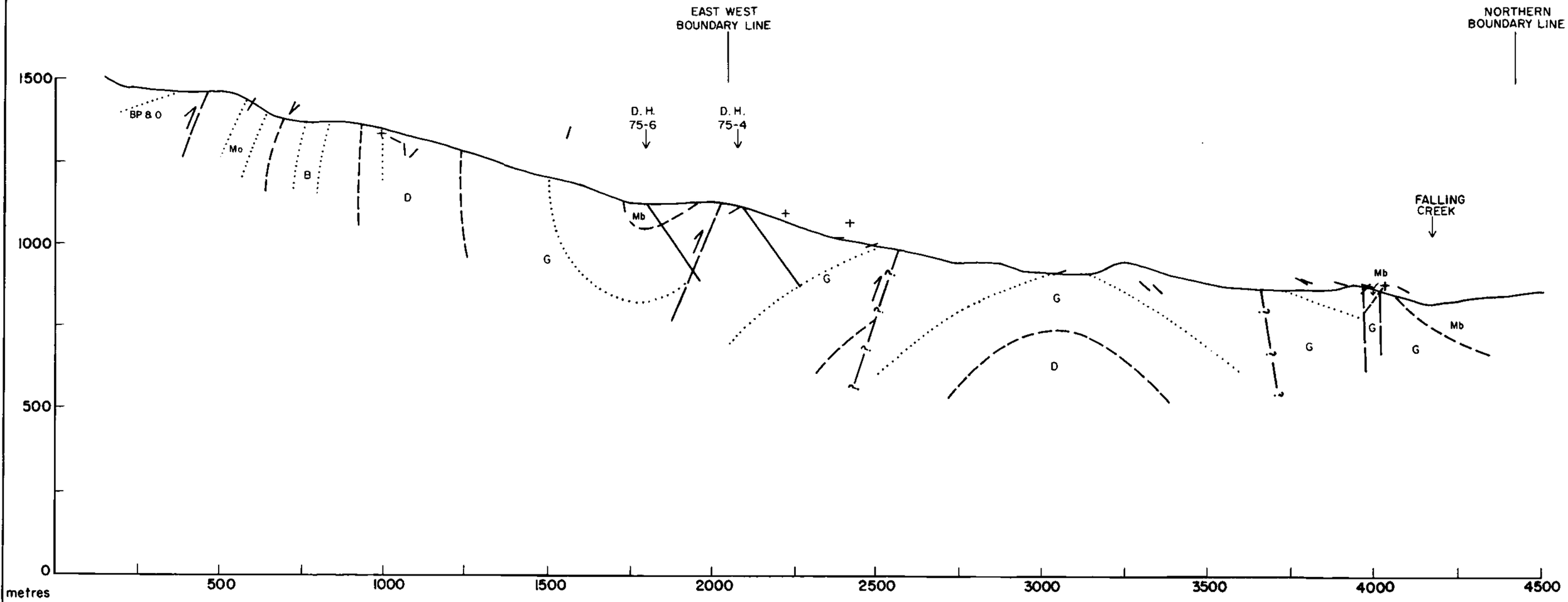
523

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION-WILLOW CREEK

PR-Falling Creek 81(2)A

FEB. 1982 Figure 10 930-8



523

—?— FAULT INFERRED	?	UNKNOWN PROJECTION	Mb	MOOSEBAR	B BRENOT
—→— FAULT WITH DIRECTION OF THROW	/	APPARENT DIP SYMBOL	G	GETHING	Mo MONACH
— — — INFERRED FORMATION CONTACT	+	OUTCROP WITHOUT DIP MEASUREMENT	D	DRESSER	BP & O BEATTIE PEAKS & OLDER
····· FORM LINE					

SCALE

0 100 200 300 400 500 metres

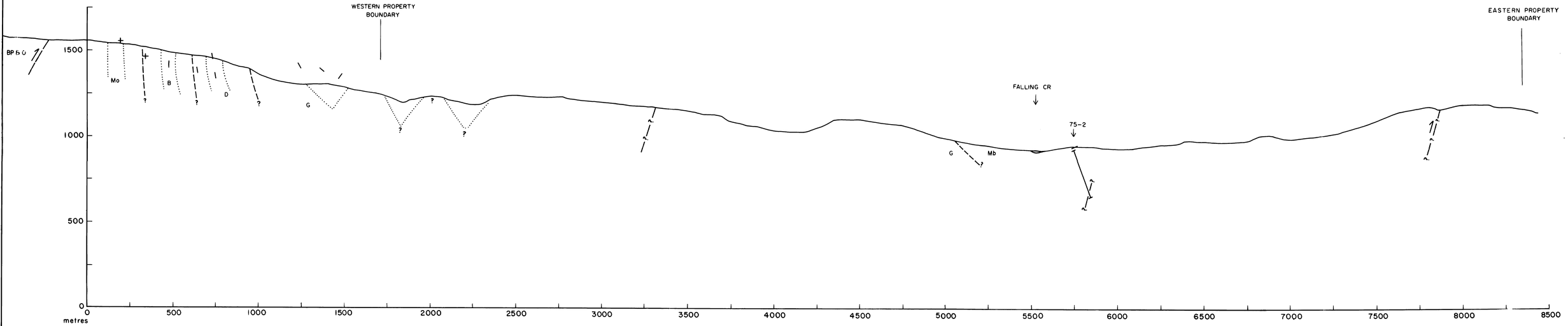
ORIGIN OF PROFILE HAS MAP COORDINATES 46700.051200.0
PROFILE LOOKING IN DIRECTION 321.0

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION-SLIPPERY CREEK

PR- Falling Creek 8(12)A

FEB.1982. Figure 11 93 O-8



—?—?— FAULT INFERRED
—⟹— FAULT WITH DIRECTION OF THROW
— — — INFERRED FORMATION CONTACT
..... FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mo MONACH
Mb MOOSEBAR
G GETHING
D DRESSER
BP&O BEATTIE PEAKS & OLDER

ORIGIN OF PROFILE HAS MAP COORDINATES 49330.0 48480.0 0.0
PROFILE LOOKING IN DIRECTION 315.0 0.0

SCALE
0 100 200 300 400 500 metres

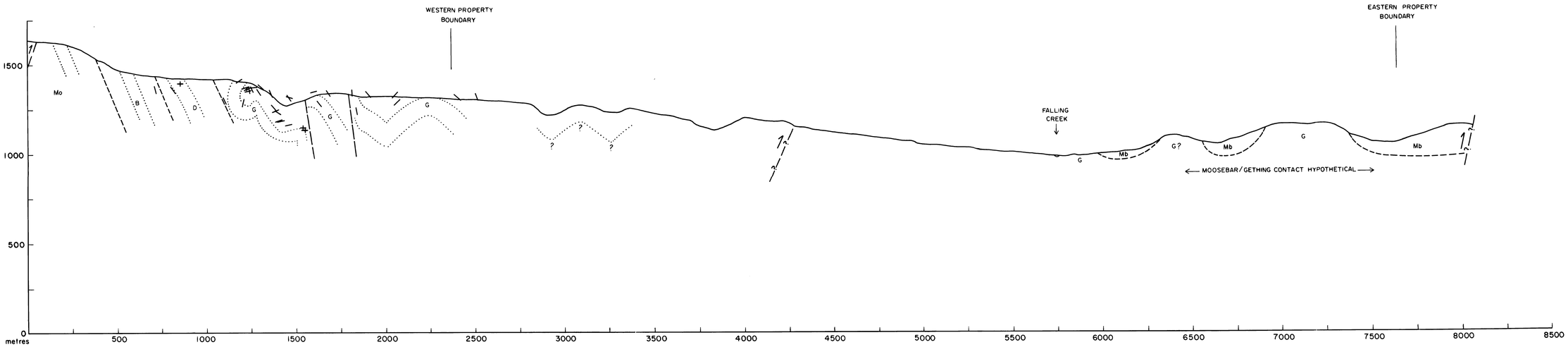
523

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION-HUDETTE CREEK

PR-Falling Creek 81(2)A

FEB. 1982 Figure 12 93O-8



523

—?—?— FAULT INFERRED
—→— FAULT WITH DIRECTION OF THROW
— — — INFERRED FORMATION CONTACT
..... FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mo MONACH
Mb MOOSEBAR
G GETHING
D DRESSER

ORIGIN OF PROFILE HAS MAP COORDINATES 50600.047000.0 0.0
PROFILE LOOKING IN DIRECTION 315.0 0.0

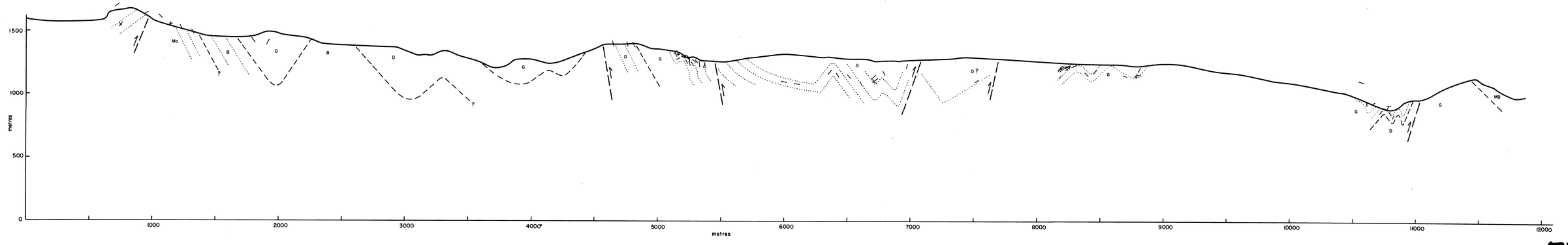
SCALE
0 100 200 300 400 500 metres

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION-HUMMING BIRD CREEK

PR-Falling Creek 81(2)A

FEB. 1982 Figure 13 93 O-8



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FAULT WITH DIRECTION OF THROW
INFERRED FORMATION CONTACT
FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER
Mo MONARCH

ORIGIN OF PROFILE HAS MAP COORDINATES 52000.043220 0.0
PROFILE LOOKING IN DIRECTION 315.0 0.0

SCALE
0 100 200 300 400 500 metres

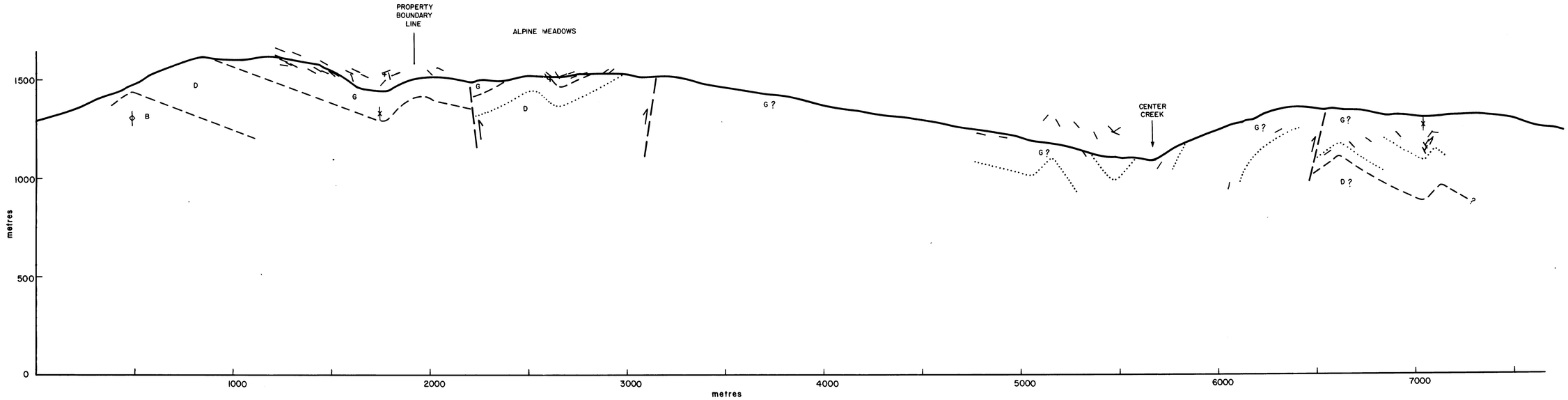
523

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION – SKINNY LAKE

PR-Falling Creek 81(2)A

MARCH 1982 Figure 14 93 O-8



—?—?— FAULT INFERRED
FAULT WITH DIRECTION OF THROW
INFERRED FORMATION CONTACT
FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER

SYNCLINE
ANTICLINE

ORIGIN OF PROFILE HAS MAP COORDINATES 54000,043000
PROFILE LOOKING IN DIRECTION 315.0 0.0

SCALE
0 100 200 300 400 500 metres

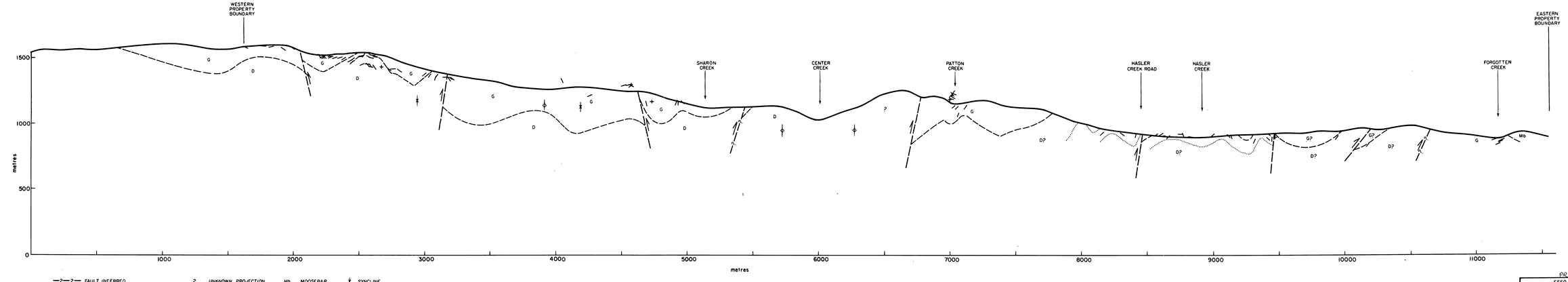
523

PR- Falling Creek 81(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION – ALPINE MEADOWS

MARCH 1982 Figure 15 93 O-8



—?—?— FAULT INFERRED
—/—/— FAULT WITH DIRECTION OF THROW
— — — INFERRED FORMATION CONTACT
····· FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER

SYNCLINE
ANTICLINE

ORIGIN OF PROFILE HAS MAP COORDINATES 55000.0,42000.0
PROFILE LOOKING IN DIRECTION 315.0 0.0

SCALE
0 100 200 300 400 500 metres

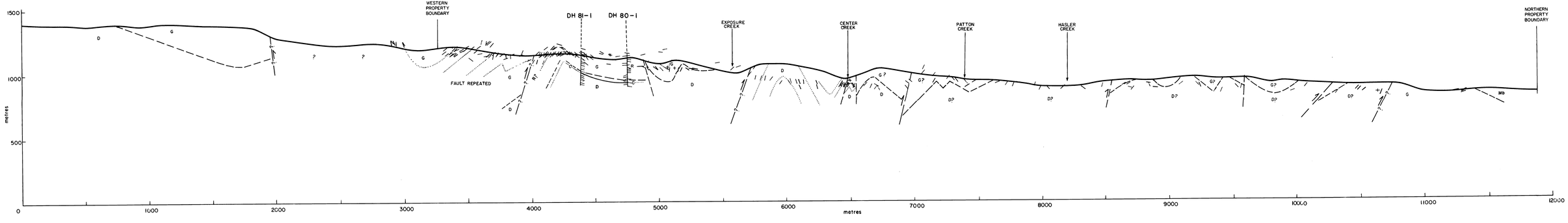
523

PR - Falling Creek S1(G)A

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION - SHARON CREEK

MARCH 1982 Figure 16 930-8



—?—?— FAULT INFERRED
FAULT WITH DIRECTION OF THROW
INFERRED FORMATION CONTACT
FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER

R RAT SEAM
C CONTACT SEAM

ORIGIN OF PROFILE HAS MAP COORDINATES 57000.040350.0
PROFILE LOOKING IN DIRECTION 300.0 0.0

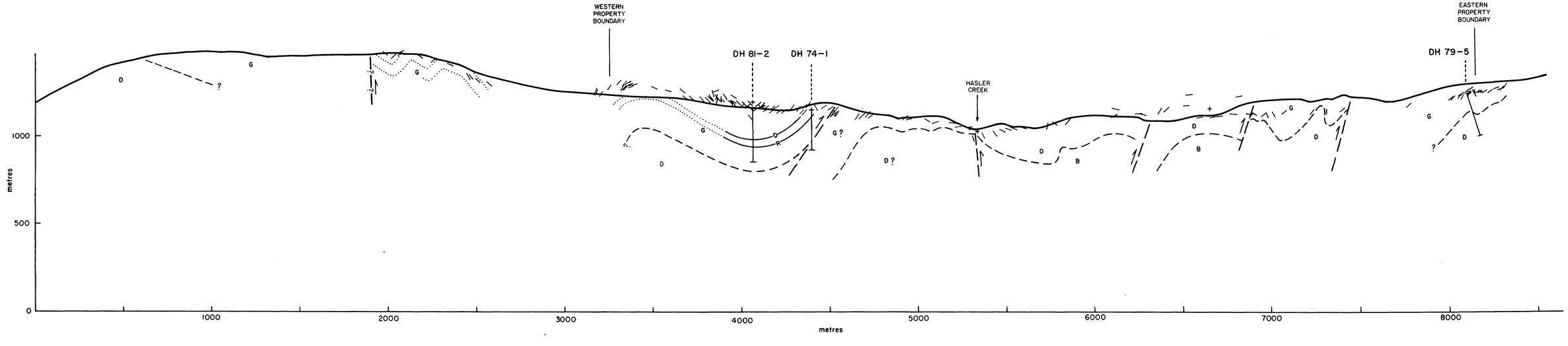
SCALE
0 100 200 300 400 500 metres

523

PR-Falling Creek 31(2)A
ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION-EXPOSURE CREEK

MARCH 1982 Figure 17 93 O-8



—?—?— FAULT INFERRED
FAULT WITH DIRECTION OF THROW
— — — INFERRED FORMATION CONTACT
FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER

—D— DAVES SEAM
—R— RAT SEAM

ORIGIN OF PROFILE HAS MAP COORDINATES 58000.099000.0
PROFILE LOOKING IN DIRECTION 308.0 0.0

SCALE
0 100 200 300 400 500 metres

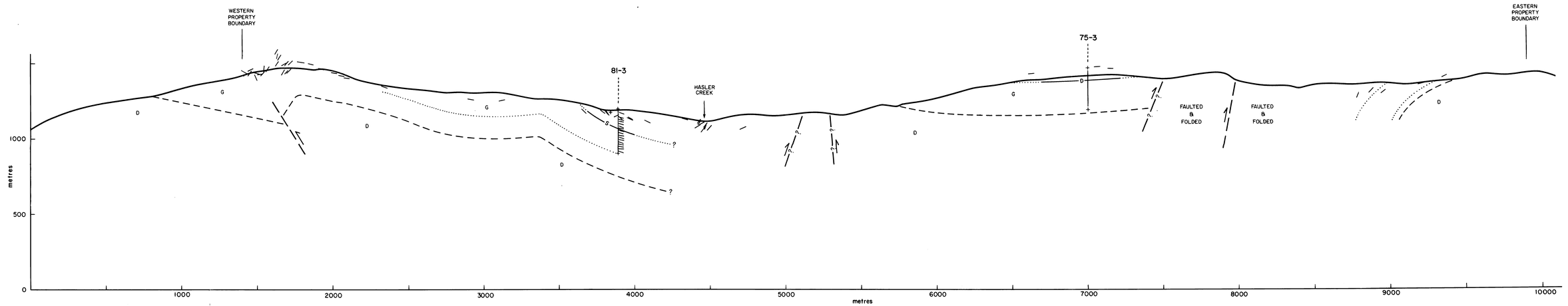
PR- Falling Creek 81(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION-FOLDING CREEK

MARCH 1982 Figure 18 93 O-8

523



—?—?— FAULT INFERRED
—→— FAULT WITH DIRECTION OF THROW
— — — INFERRED FORMATION CONTACT
····· FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER

—S— SPLIT SEAM
—D— DAVES SEAM

ORIGIN OF PROFILE HAS MAP COORDINATES 59000,038000 0.0
PROFILE LOOKING IN DIRECTION 315.0 0.0

SCALE
0 100 200 300 400 500 metres

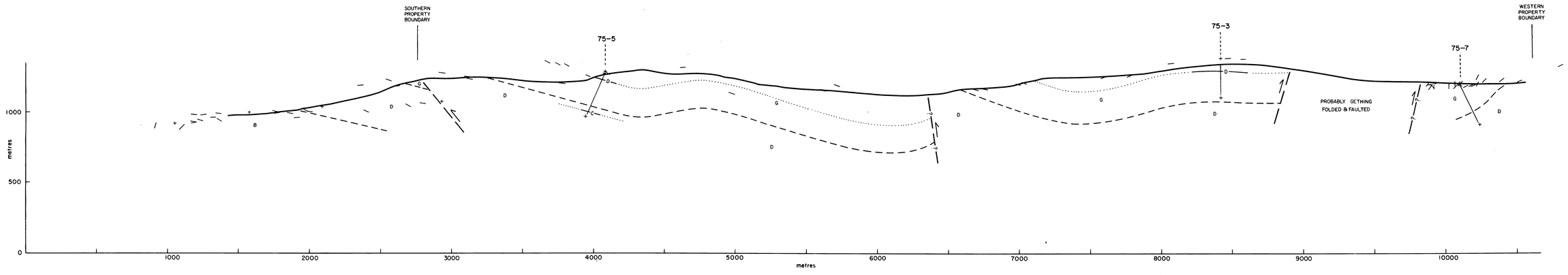
PR- Falling Creek 81(2)A

523

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION – FOREST BURN B

MARCH 1982 Figure 19 93 0-8



—?—?— FAULT INFERRED
FAULT WITH DIRECTION OF THROW
— — — INFERRED FORMATION CONTACT
FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER

—C— CONTACT SEAM
—D— DAVES SEAM

ORIGIN OF PROFILE HAS MAP COORDINATES 59000.036000 0.0
PROFILE LOOKING IN DIRECTION 315.0 0.0

SCALE
0 100 200 300 400 500 metres

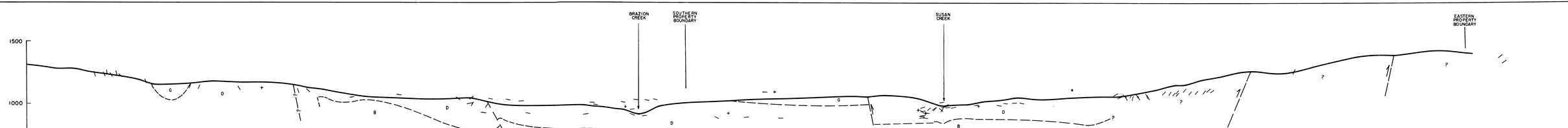
PR-Falling Creek 81(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION—OUR SEISMIC

MARCH 1982 Figure 20 93 O-8

523



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—⇒— FAULT WITH DIRECTION OF THROW
- - - - INFERRED FORMATION CONTACT
..... FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER

ORIGIN OF PROFILE HAS MAP COORDINATES 60000.0 34000.0 0.0
PROFILE LOOKING IN DIRECTION 35.0 0.0

SCALE
0 100 200 300 400 500 metres

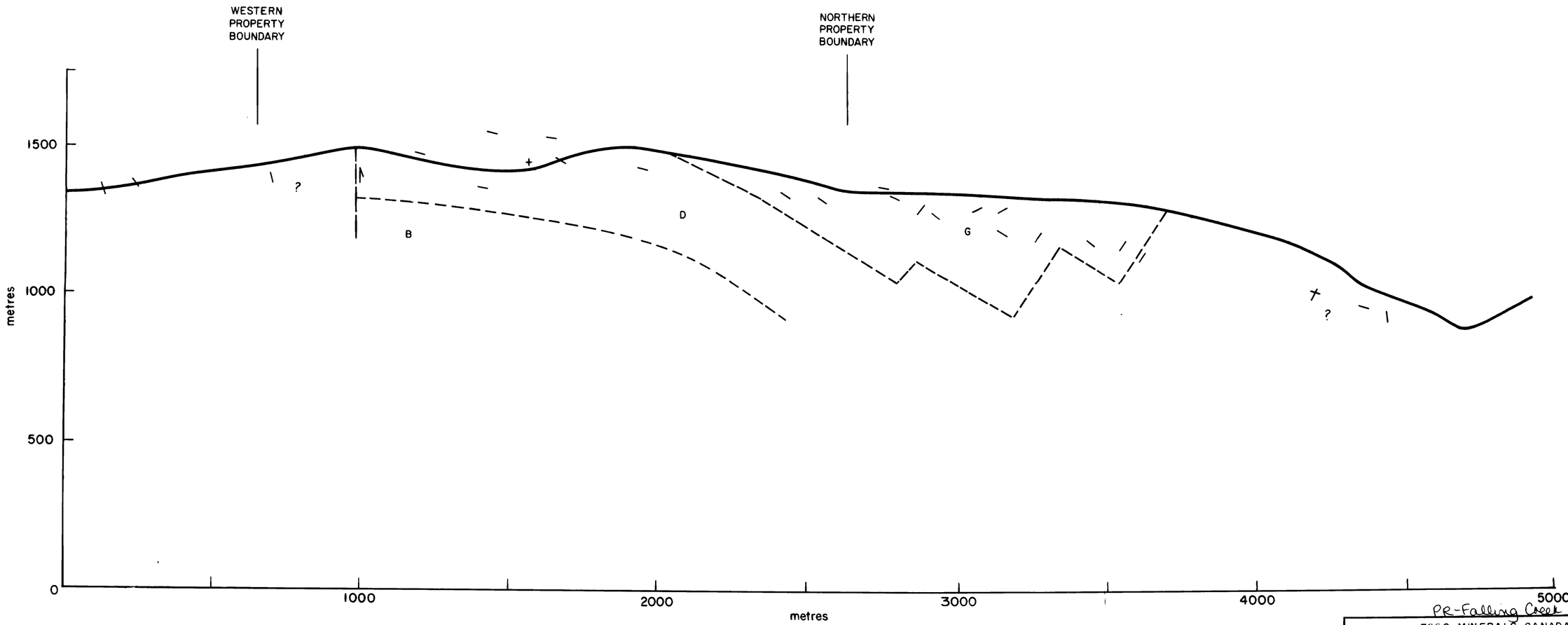
523

PR-Falling Creek 81(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
SECTION–SUSAN CREEK

MARCH 1982 Figure 21 93 O/8



—?—?— FAULT INFERRED
FAULT WITH DIRECTION OF THROW
INFERRED FORMATION CONTACT
FORM LINE

? UNKNOWN PROJECTION
/ APPARENT DIP SYMBOL
+ OUTCROP WITHOUT DIP MEASUREMENT

Mb MOOSEBAR
G GETHING
D DRESSER

SCALE
0 100 200 300 400 500metres

ORIGIN OF PROFILE HAS MAP COORDINATES 84.000.014000.0
PROFILE LOOKING IN DIRECTION 315.0

PR-Falling Creek 81(2)A

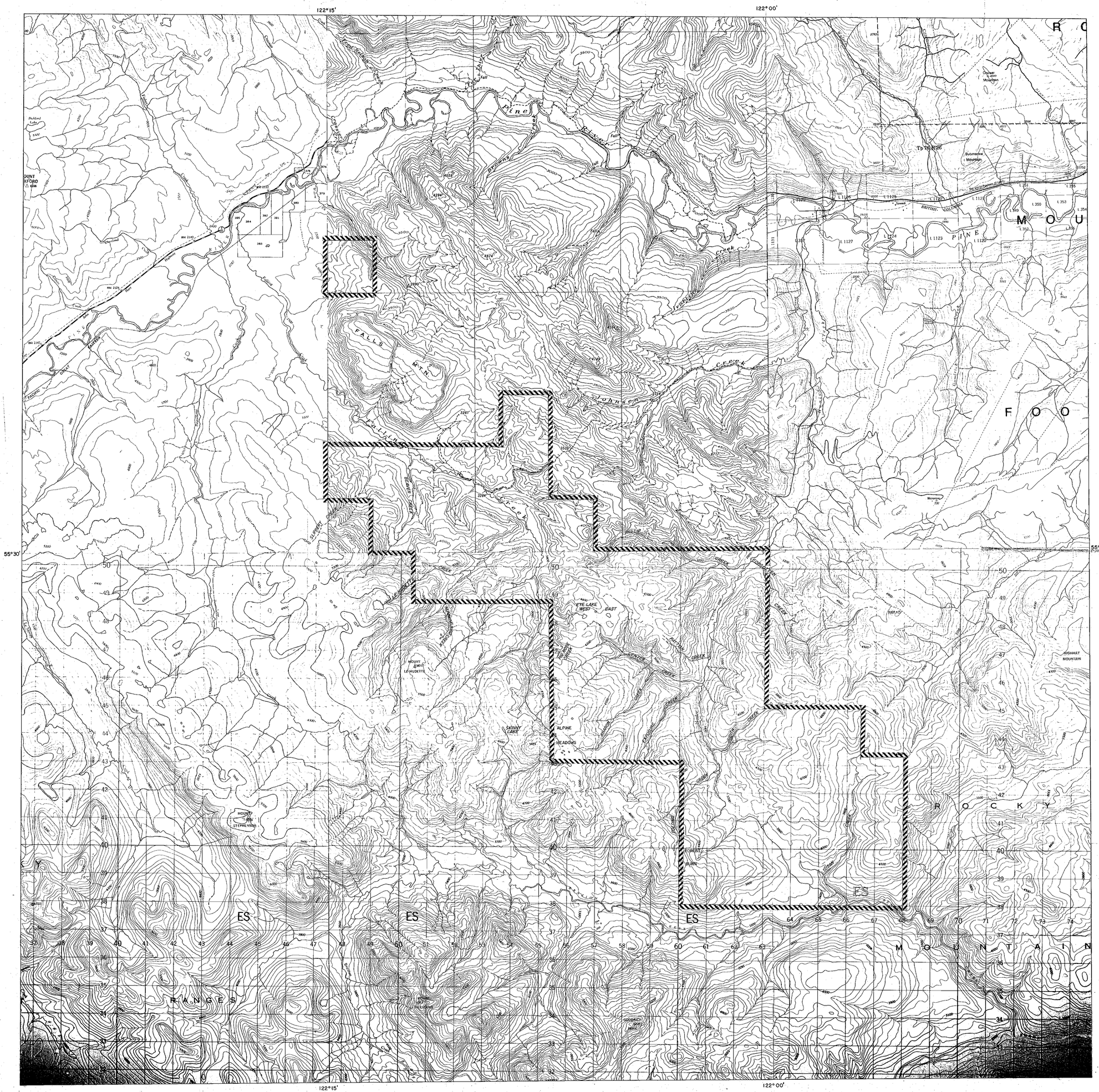
ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK

SECTION-CHAMBERLAIN CREEK

MARCH 1982 Figure 22 93 O-8

523



523

ESSO MINERALS CANADA–COAL DEPARTMENT

FALLING CREEK

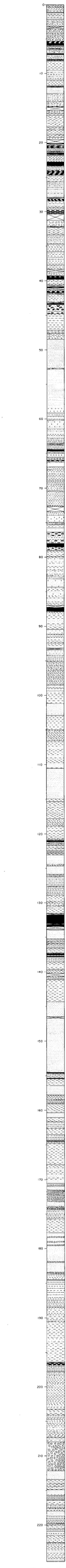
1 : 50,000

Figure 25

FEB. 1982 PR-Falling Creek 81(2)A 930-8

STRATIGRAPHIC SECTION

81-1



TRUE STRAT. INT. = 225.26m.

LEGEND

SANDSTONE
SILTSTONE
MUDSTONE
COAL
MUDSTONE(COAL OR COALY MUDSTONE)
PEBBLE SAND OR HOR.ZON
CONGLOMERATE
LOST CORE

- CARBONACEOUS
SILTY
COALY
ARGILLACEOUS

523

Fig. Falling Creek 81-1

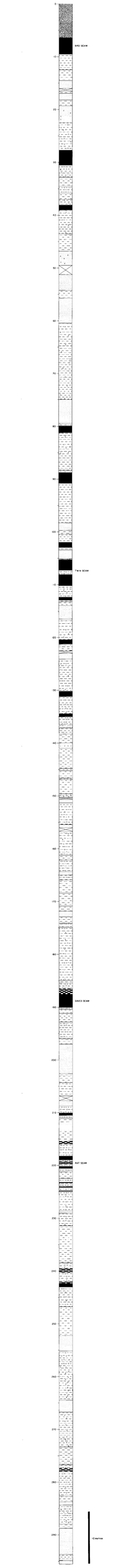
ESSO MINERALS CANADA
COAL DEPARTMENT
FALLING CREEK
STRATIGRAPHIC SECTION
DRILL HOLE 81-1
Figure 60

F.R.1982

81-1.A

STRATIGRAPHIC SECTION

81-2



TRUE STRAT. INT. ~295.50m.

LEGEND

CHERT/ROCK
SANDSTONE
SILTSTONE
MUDSTONE
COAL
MUDSTONE/COAL/CBP COAL/ MUDSTONE/ LOST CORE

C CARBONACEOUS
SILTY
COAL
C.P. CARBONACEOUS PARTINGS

523

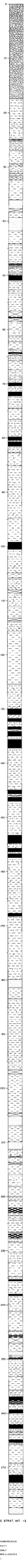
Dr. Falling Creek B.C.M.

LEGEND MODIFIED FROM
GEOLOGY OF
FALLING CREEK
STRATIGRAPHIC SECTION
DRILL HOLE 81-2
Page 81

Scale: 1:50 Date: Feb. 1981

STRATIGRAPHIC SECTION

81-3



TRUE STRAT. INT. =278.60m.

LEGEND

SANDSTONE
SILTSTONE
MUDSTONE
COAL
MUDSTONE (COAL TOP CONLY W/SOFTNESS)
TILL
LOST CORE

C CHONCHOIDAL
DILT?
CONLY
- - - SMEARS/SOFTS

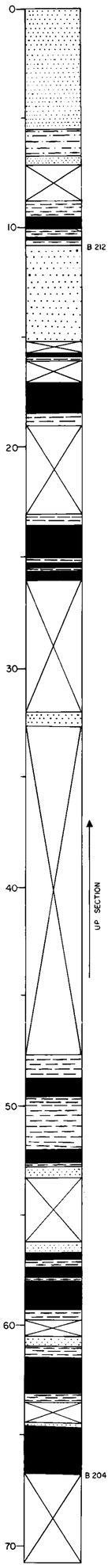
523

Dr. Robert M. Gordon

FOSS, ANDREW & GORDON
COAL STRATIGRAPHY

FALLING CREEK
STRATIGRAPHIC SECTION
DRILL HOLE 81-3
Page 42

FCC.DWG 10-1-87



10 metres

LEGEND

- SANDSTONE
- SILTSTONE
- MUDSTONE
- COAL
- LOST CORE

PR-FALLING CREEK 81(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT

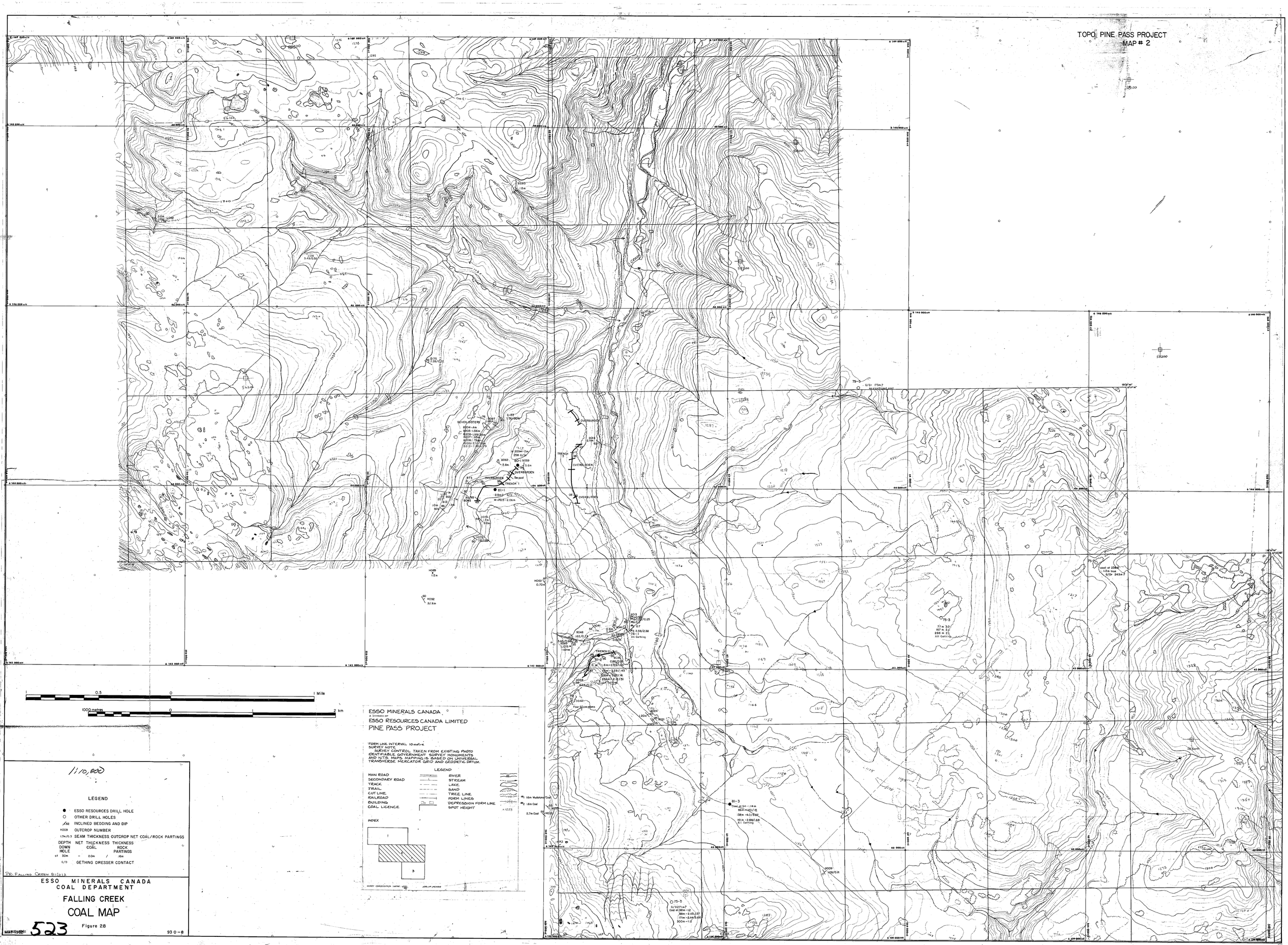
FALLING CREEK

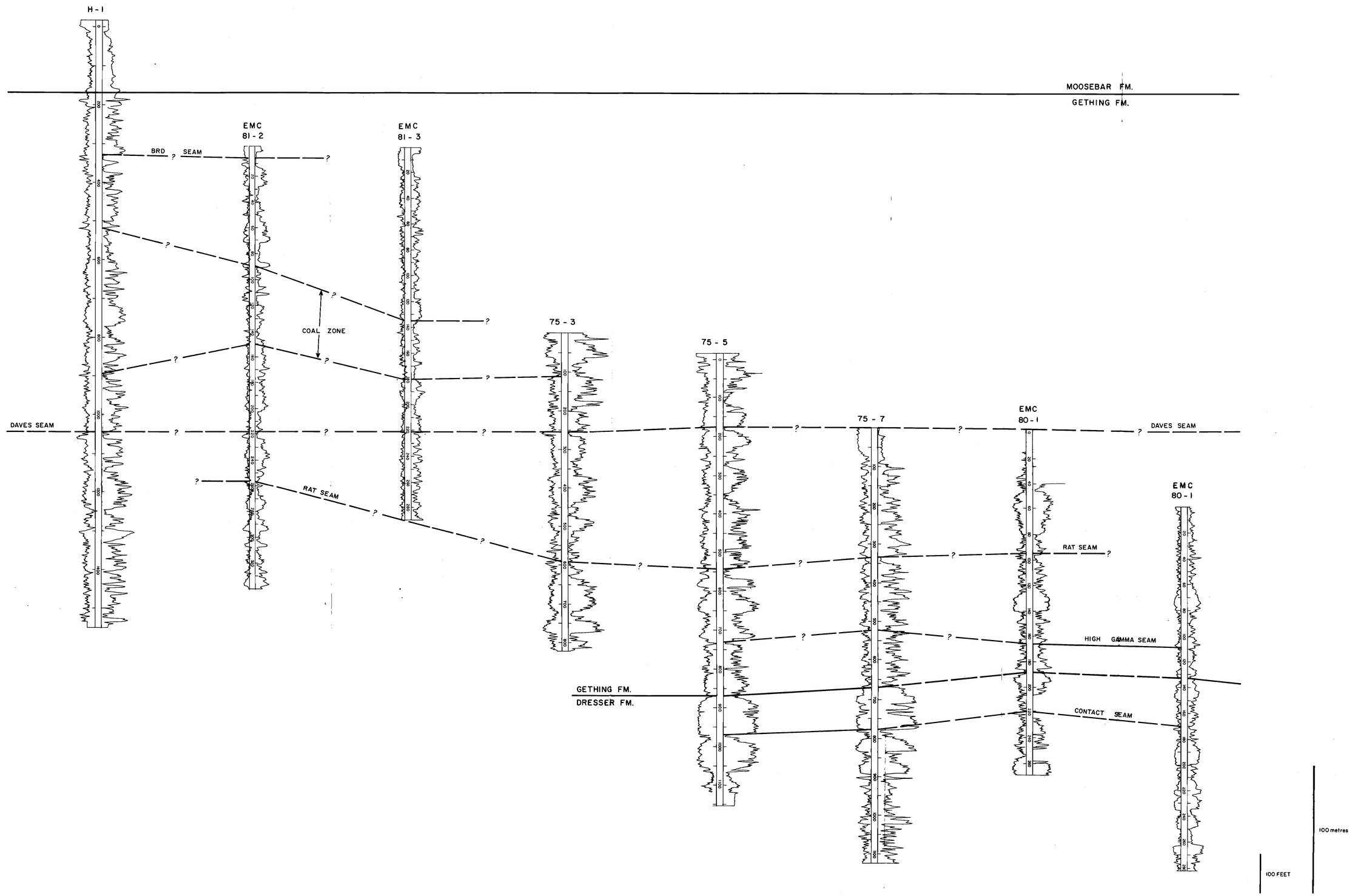
SEVEN SISTERS COAL SEAMS
STRATIGRAPHIC SECTION

Figure 26

FEB. 1982. 930-8

523


TOPO PINE PASS PROJECT
MAP # 2
1 Mile
2 km
ESSO MINERALS CANADA
A DIVISION OF
ESSO RESOURCES CANADA LIMITED
PINE PASS PROJECT
FORM LINE INTERVAL 10 metre
SURVEY NOTE
SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.
LEGEND
MAIN ROAD
SECONDARY ROAD
TRACK
TRAIL
CUT LINE
RAILROAD
BUILDING
COAL LICENCE
RIVER
STREAM
LAKE
SAND
TREE LINE
FORM LINES
DEPRESSION FORM LINE
SPOT HEIGHT
INDEX
1:10,000
LEGEND
ESSO RESOURCES DRILL HOLE
OTHER DRILL HOLES
INCLINED BEDDING AND DIP
OUTCROP NUMBER
SEAM THICKNESS OUTCROP NET COAL/ROCK PARTINGS
DEPTH DOWN HOLE
NET THICKNESS COAL
THICKNESS ROCK PARTINGS
GETHING DRESSER CONTACT
ESSO MINERALS CANADA
COAL DEPARTMENT
FALLING CREEK
COAL MAP
Figure 28
523
93 O-8



LEGEND
CORRELATION LEVEL OF CONFIDENCE
GOOD
FAIR
POOR

PR-FALLING CREEK 81(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
CORRELATION CHART
GETHING FORMATION

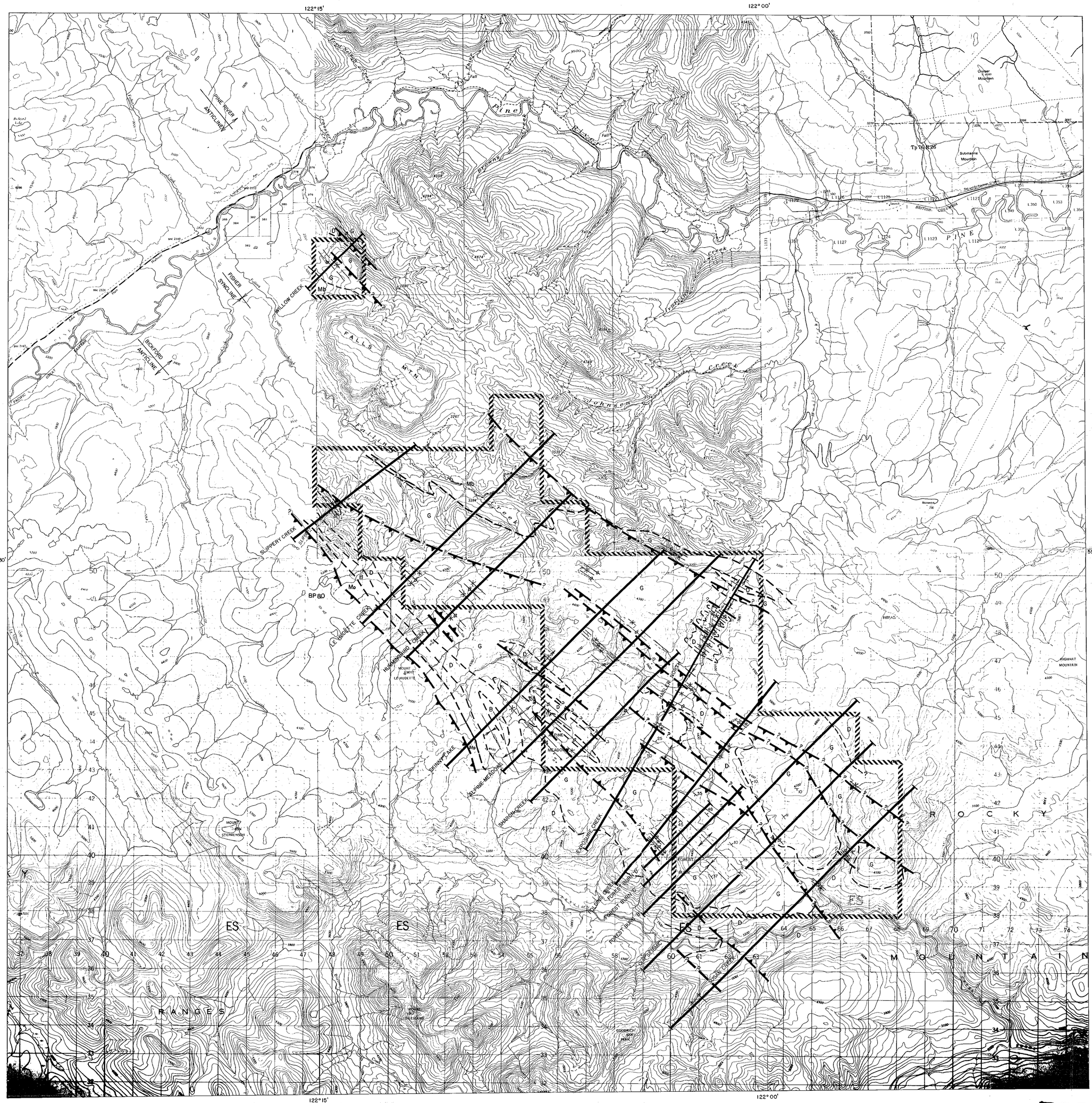
Figure 29

APRIL, 1982

930-8

523

FALLING CREEK CORRELATION CHART 930-8



	STRIKE # / DIP VALUE
OUTCROP IDENTIFICATION	
FORMATION CONTACT DEFINED	
FORMATION CONTACT INFERRED	
FAULT TEETH INDICATE REVERSE THROW	
FAULT INFERRED	? ?
ANTICLINE	OR
ANTICLINE INFERRED	OR
SYNCLINE	OR
SYNCLINE INFERRED	OR
MOOSEBAR	Mb
GETHING	G
DRESSER	D
BRENOT	B
MONACH	Mo
BEATTIE PEAKS AND OLDER	BP&O
CROSS SECTION	
PLUNGE	
EXTENTION UNKNOWN	?
FAULT INFERRED	? ?

PR- FALLING CREEK 81(2)A

1:50,000

MILES 0 1 2 3

1000 0 1000 2000 3000 4000 METRES

ESSO MINERALS CANADA-COAL DEPARTMENT

FALLING CREEK

GEOLOGICAL BASE MAP

FIGURE 30

FEB. 1982

930-8

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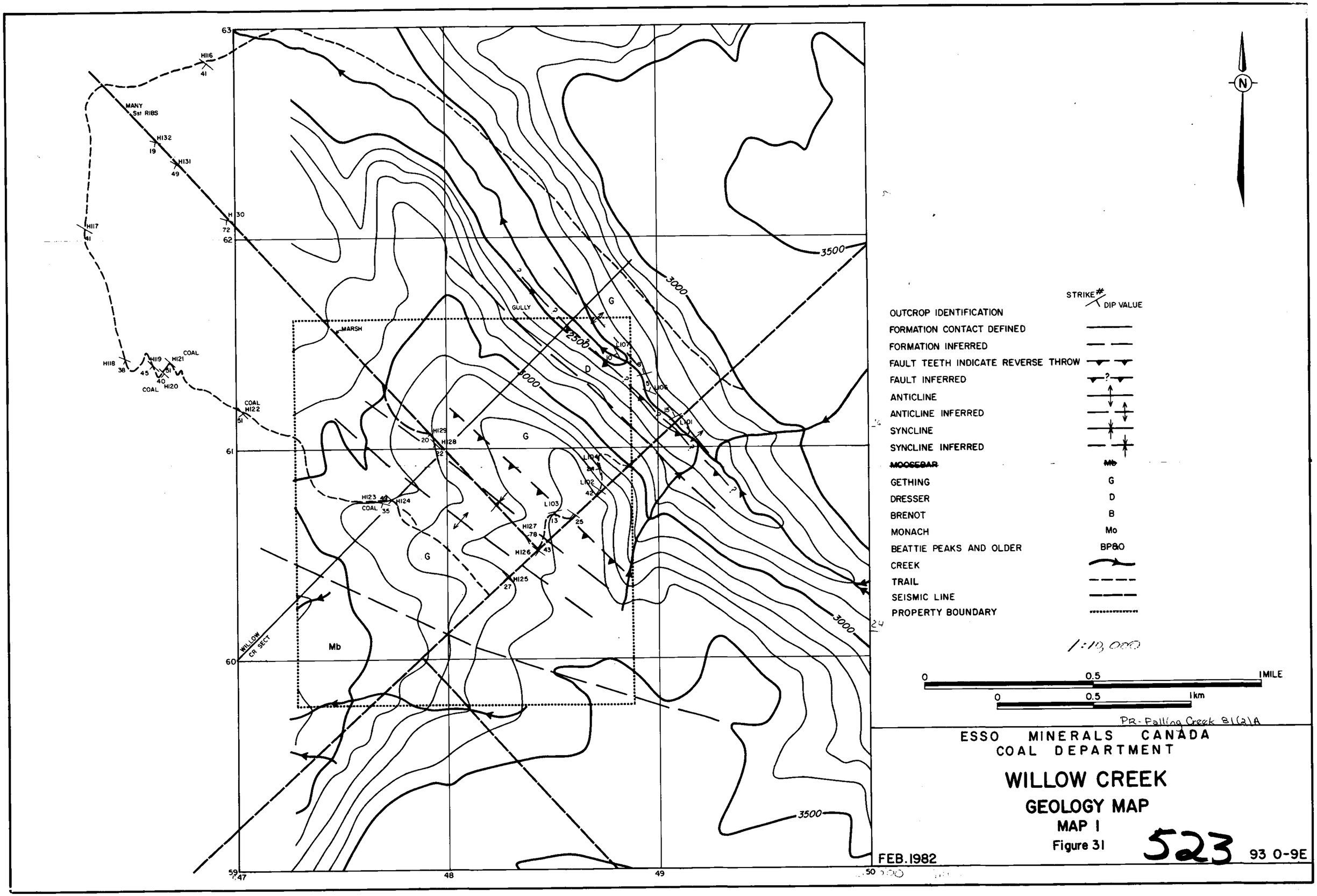
FALLING CREEK GEOLOGICAL BASE MAP -93 O-8



ESSO MINERALS CANADA
COAL DEPARTMENT

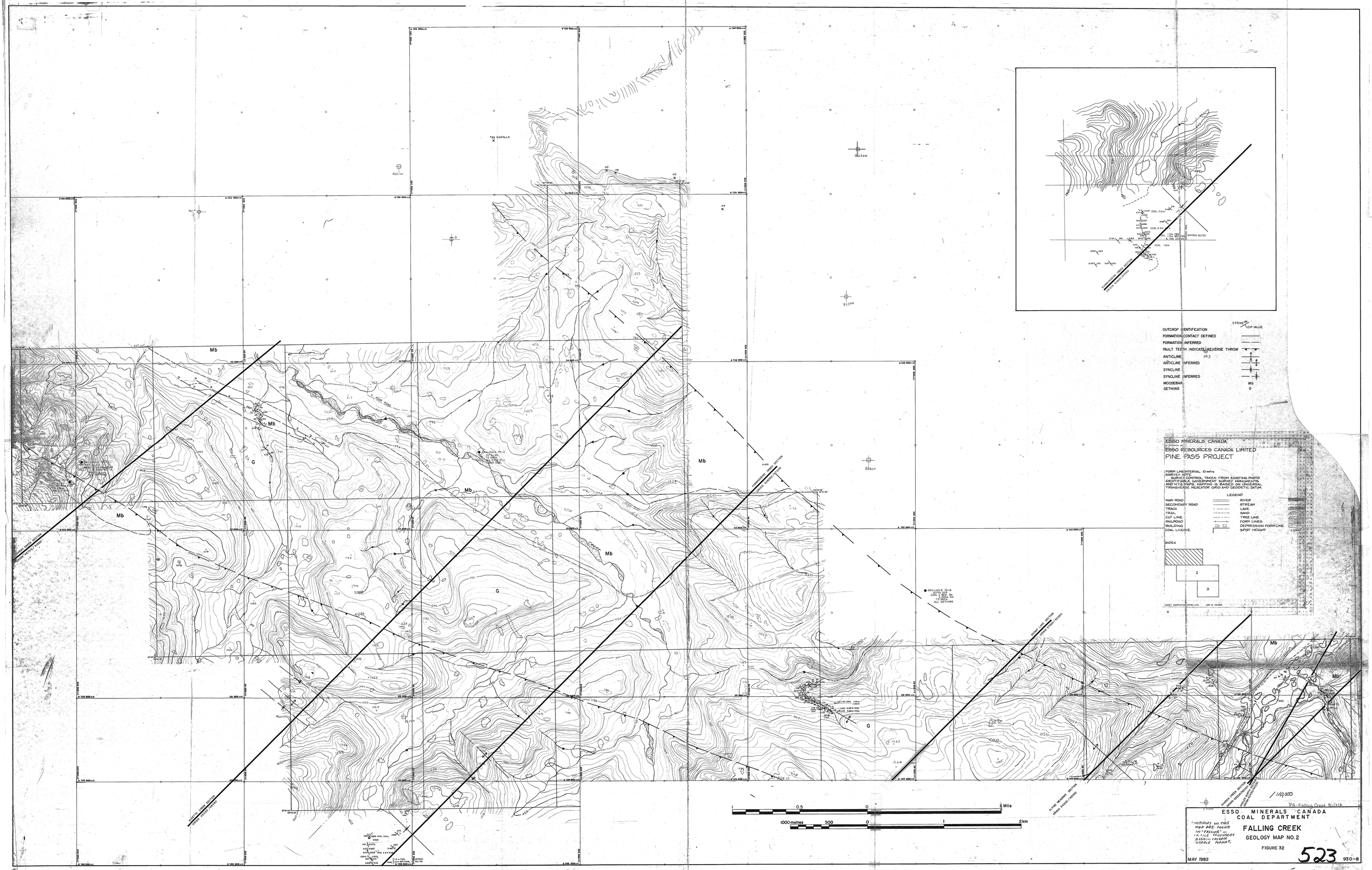
WILLOW CREEK
GEOLOGY MAP
MAP 1
Figure 31

FEB. 1982

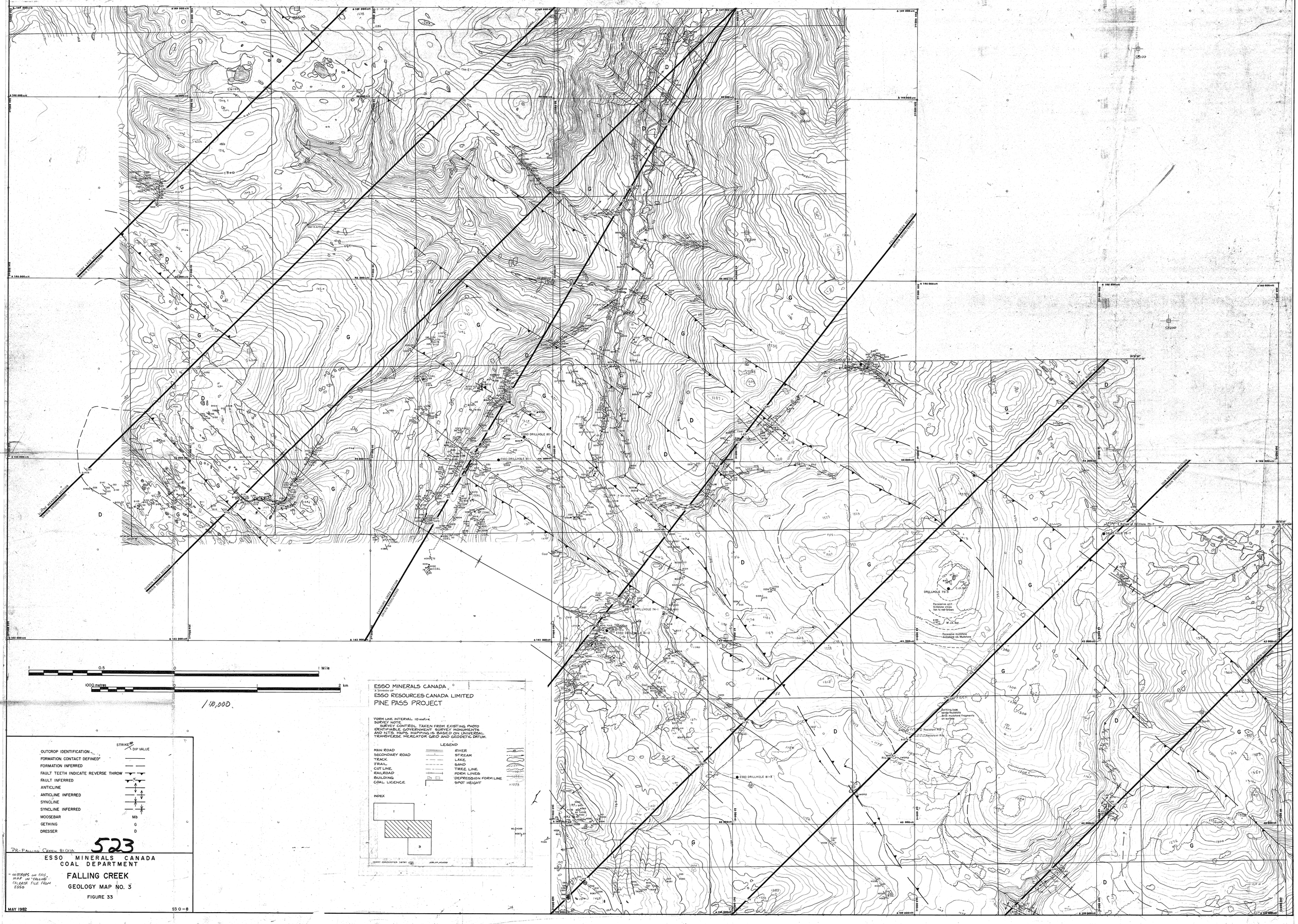
523

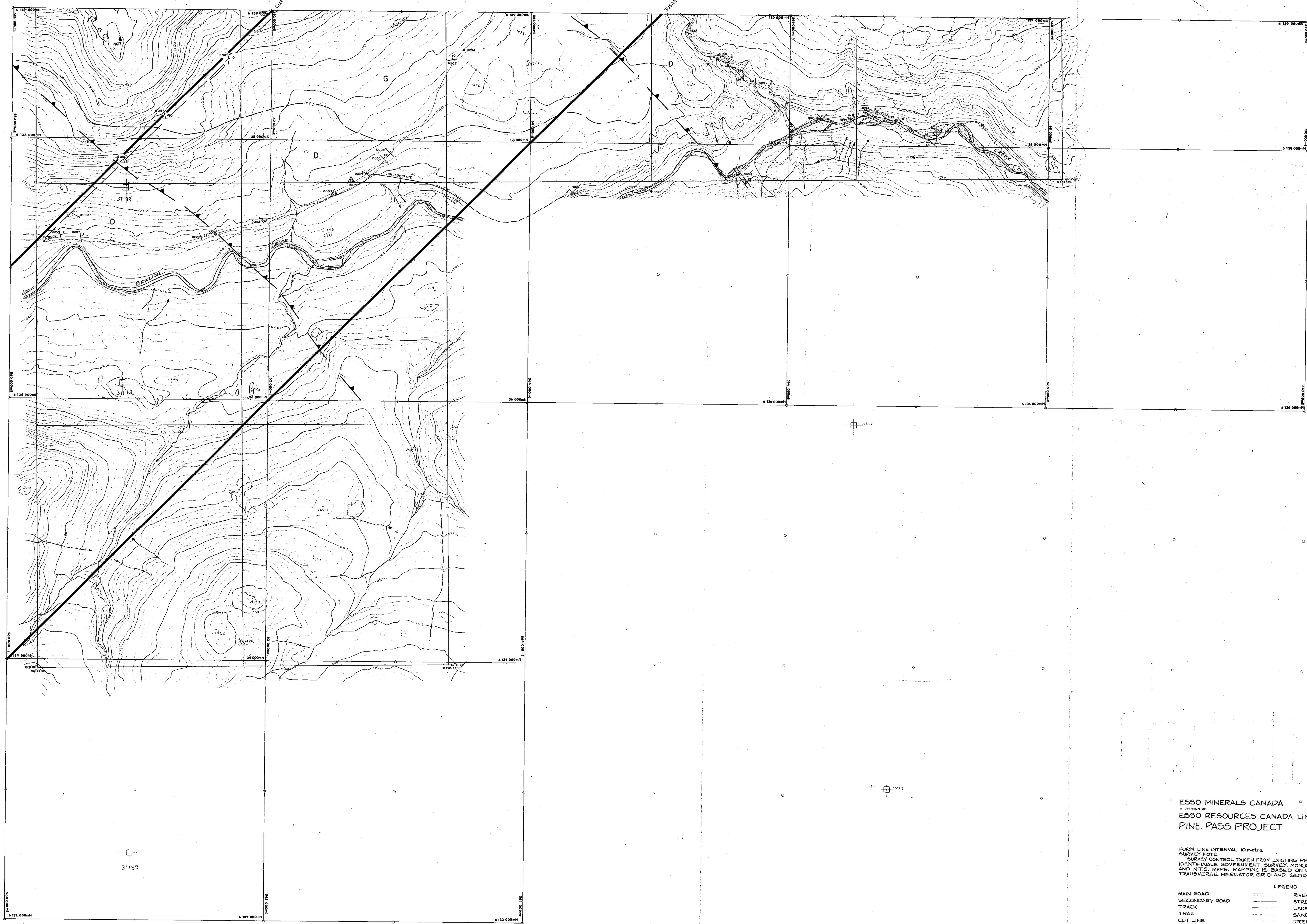
93 O-9E

FEB. 82 O/L GEOLOGICAL MAP 1:10000 WILLOW CREEK 93 O-9E



ESSO MINERALS CANADA
ESSO RESOURCES CANADA LIMITED
PINE PASS PROJECT
FORM LINE INTERVAL 10 metre
SURVEY NOTE
SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.
LEGEND
MAIN ROAD
SECONDARY ROAD
TRACK
TRAIL
CUT LINE
RAILROAD
BUILDING
COAL LICENCE
RIVER
STREAM
LAKE
SAND
TREE LINE
FORM LINES
DEPRESSION FORM LINE
SPOT HEIGHT
INDEX
2
3
OUTCROP IDENTIFICATION
FORMATION CONTACT DEFINED
FORMATION INFERRED
FAULT TEETH INDICATE REVERSE THROW
ANTICLINE
ANTICLINE INFERRED
SYNCLINE
SYNCLINE INFERRED
MOOSEBAR
GETHING
STRIKE
DIP VALUE
Mb
G
1 Mile
1000 metres
500
0
1
2km
1:10,000
PR-Falling Creek 81(2)A
ESSO MINERALS CANADA
COAL DEPARTMENT
FALLING CREEK
GEOLOGY MAP NO. 2
FIGURE 32
MAY 1982
523
930-8


SAINT LEE SECTION
SHINE SOUNDINGS
FOLLING CREEK SECTION
SHINE SOUNDINGS
LYNX MEADOWS SECTION
SHINE SOUNDINGS
BIRCH RIVER SECTION
SHINE SOUNDINGS
BATCHELOR CREEK SECTION
SHINE SOUNDINGS
DOE RIVER SECTION
SHINE SOUNDINGS
ESSO DRILLHOLE 80-1
ESSO DRILLHOLE 81-1
ESSO DRILLHOLE 81-2
ESSO DRILLHOLE 81-3
DRILLHOLE 74-1
DRILLHOLE 75-7
DRILLHOLE 75-8
Coal
Swamp
Resistant Ridge
Recessive unit Siltstone chips tan to red-brown
Recessive mudstone Siltstone sh. Mudstone
Bathing type sandy mudstone brick mudstone fragments on surface
Base of Drillhole 75-7
1 Mile
0.5
0
1000 metres
2 km
1/10,000
ESSO MINERALS CANADA
A Division of
ESSO RESOURCES CANADA LIMITED
PINE PASS PROJECT
FORM LINE INTERVAL 10 metre
SURVEY NOTE
SURVEY CONTROL TAKEN FROM EXISTING PHOTO IDENTIFIABLE GOVERNMENT SURVEY MONUMENTS AND N.T.S. MAPS. MAPPING IS BASED ON UNIVERSAL TRANSVERSE MERCATOR GRID AND GEODETIC DATUM.
LEGEND
MAIN ROAD
SECONDARY ROAD
TRACK
TRAIL
CUT LINE
RAILROAD
BUILDING
COAL LICENCE
RIVER
STREAM
LAKE
SAND
TREE LINE
FORM LINES
DEPRESSION FORM LINE
SPOT HEIGHT
INDEX
1
2
3
STRIKE
DIP VALUE
OUTCROP IDENTIFICATION
FORMATION CONTACT DEFINED
FORMATION INFERRED
FAULT TEETH INDICATE REVERSE THROW
FAULT INFERRED
ANTICLINE
ANTICLINE INFERRED
SYNCLINE
SYNCLINE INFERRED
MOOSEBAR
GETHING
DRESSER
Mb
G
D
PR-Falling Creek 81(2)A
523
ESSO MINERALS CANADA
COAL DEPARTMENT
FALLING CREEK
GEOLOGY MAP NO. 3
FIGURE 33
MAY 1982
93 O-8



0.5 0 1 Mile

1000 metres 500 0 1 2 km

1:10,000

STRIKE # / DIP VALUE

OUTCROP IDENTIFICATION	
FORMATION CONTACT DEFINED	
FORMATION INFERRED	
FAULT TEETH INDICATE REVERSE THROW	
ANTICLINE	
SYNCLINE	

ESSO MINERALS CANADA
A DIVISION OF
ESSO RESOURCES CANADA LIMITED
PINE PASS PROJECT

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

LEGEND

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

INDEX

1 2 3

HARDY ASSOCIATES (1978) LTD. JOB Nº M0459

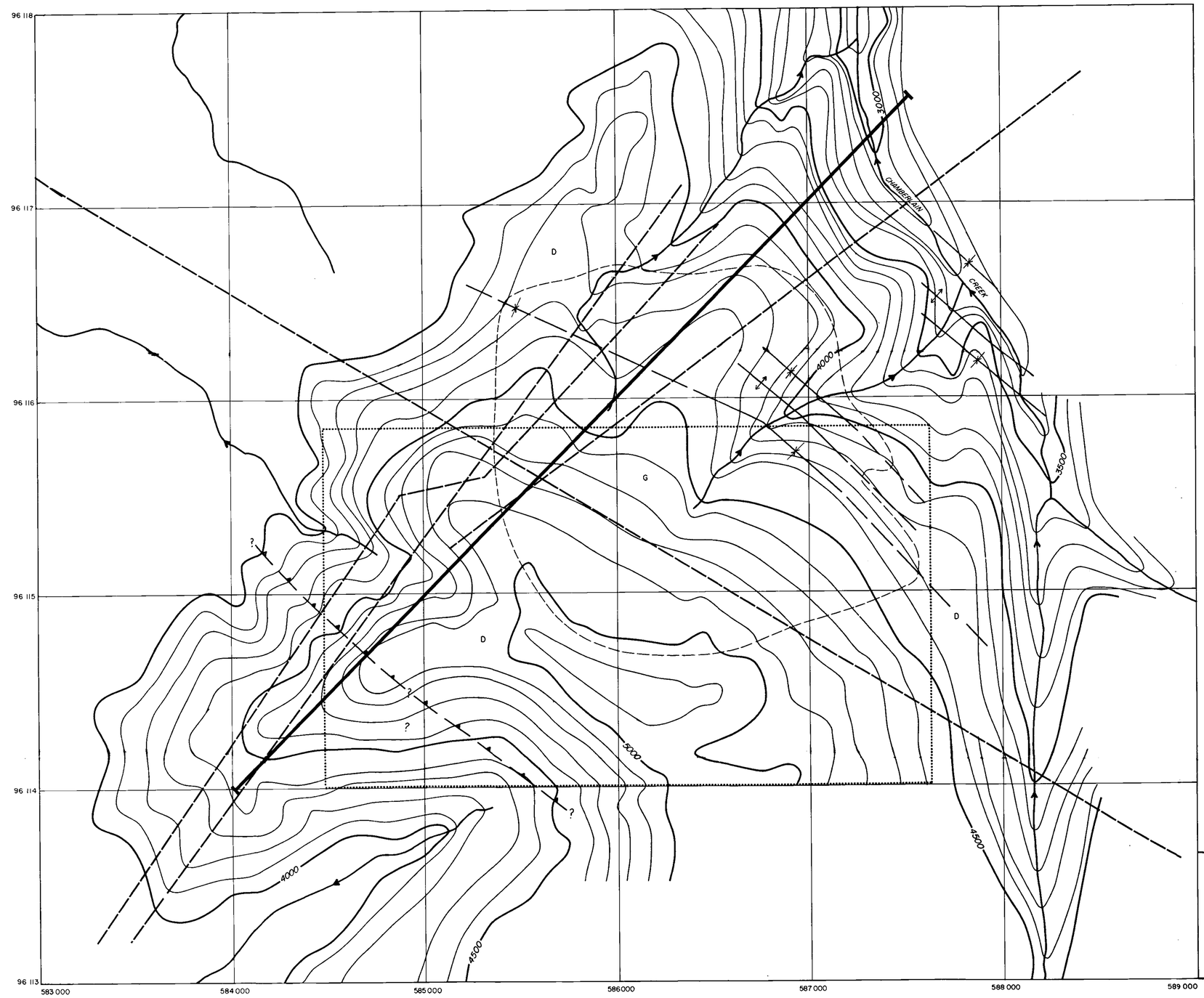
523 : PR-FALLING CREEK 81(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
GEOLOGY MAP NO. 4
FIGURE 34

MAY 1982

930-8



CHAMBERLAIN CREEK SECTION

OUTCROP IDENTIFICATION — STRIKE / DIP VALUE

FORMATION CONTACT DEFINED

FORMATION INFERRED

FAULT TEETH INDICATE REVERSE THROW

FAULT INFERRED

ANTICLINE

ANTICLINE INFERRED

SYNCLINE

SYNCLINE INFERRED

MOOSEBAR	Mb
GETHING	G
DRESSER	D
BRENOT	B
MONACH	Mo
BEATTIE PEAKS AND OLDER	BP&O

CREEK

TRAIL

SEISMIC LINE

PROPERTY BOUNDARY

0 0.5 1 MILE

0 0.5 1 km

ESSO MINERALS CANADA
COAL DEPARTMENT

CHAMBERLAIN CREEK

GEOLOGY MAP

MAP 5

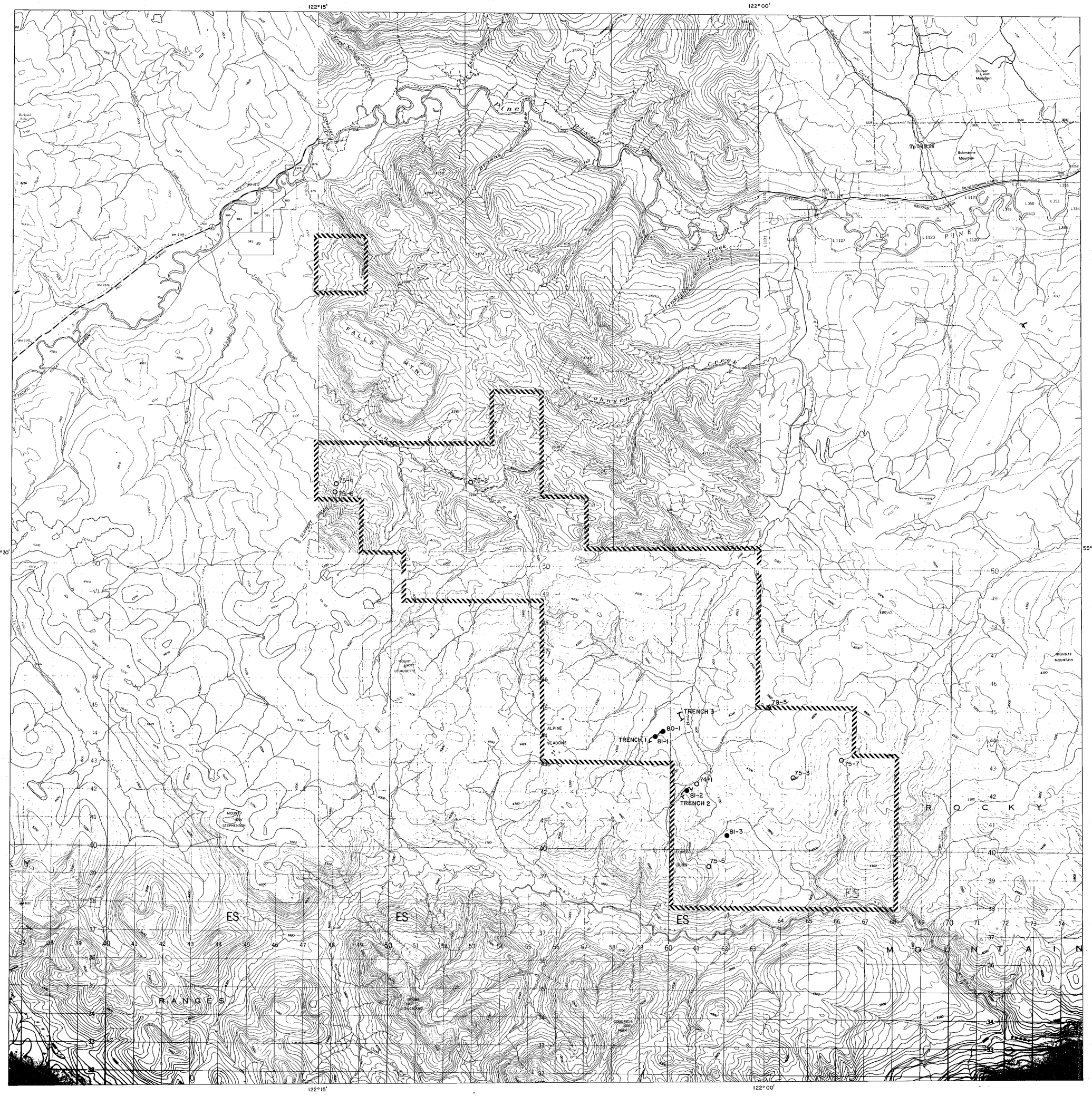
Figure 35

FEB 1982

523 93 P-4E

PR-FALLING CREEK 81(2)A

CHAMBERLAIN CREEK O/L GEOLOGY 93-P-4E



523 PR-FALLING CREEK 81(2)A

ESSO MINERALS CANADA-COAL DEPARTMENT

FALLING CREEK

DRILLHOLE AND TRENCH LOCATION MAP

1:50,000

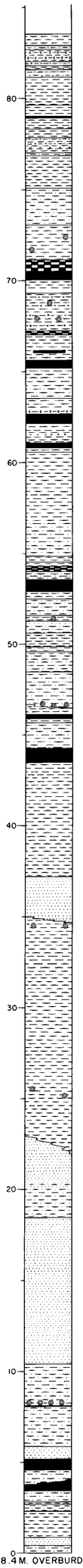
FIGURE 59

FEB. 1982

930-8

NO NORTH

O/L DRILL HOLE & TRENCH LOCATION MAP FALLING CREEK BASE MAP 930-8



10 metres

LEGEND

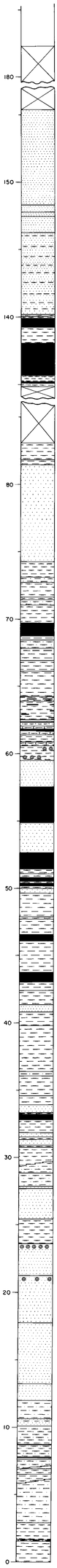
- SANDSTONE
- SILTSTONE
- MUDSTONE
- COAL
- MUDSTONE/COAL (OR COALY MUDSTONE)
- CARBONACEOUS
- SILTY
- COALY
- CONCRETIONAL

523

PR-Falling Creek B1(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT
FALLING CREEK
TRENCH #1
SOUTHWEST LIMB OF ANTICLINE
LOG #1
PAGES 1 - 16 ON DESCRIPTION SHEETS
FEB. 1982 Figure 63 93-D.8

FALLING CREEK TRENCH 1 NORTHEAST LIMB OF ANTICLINE



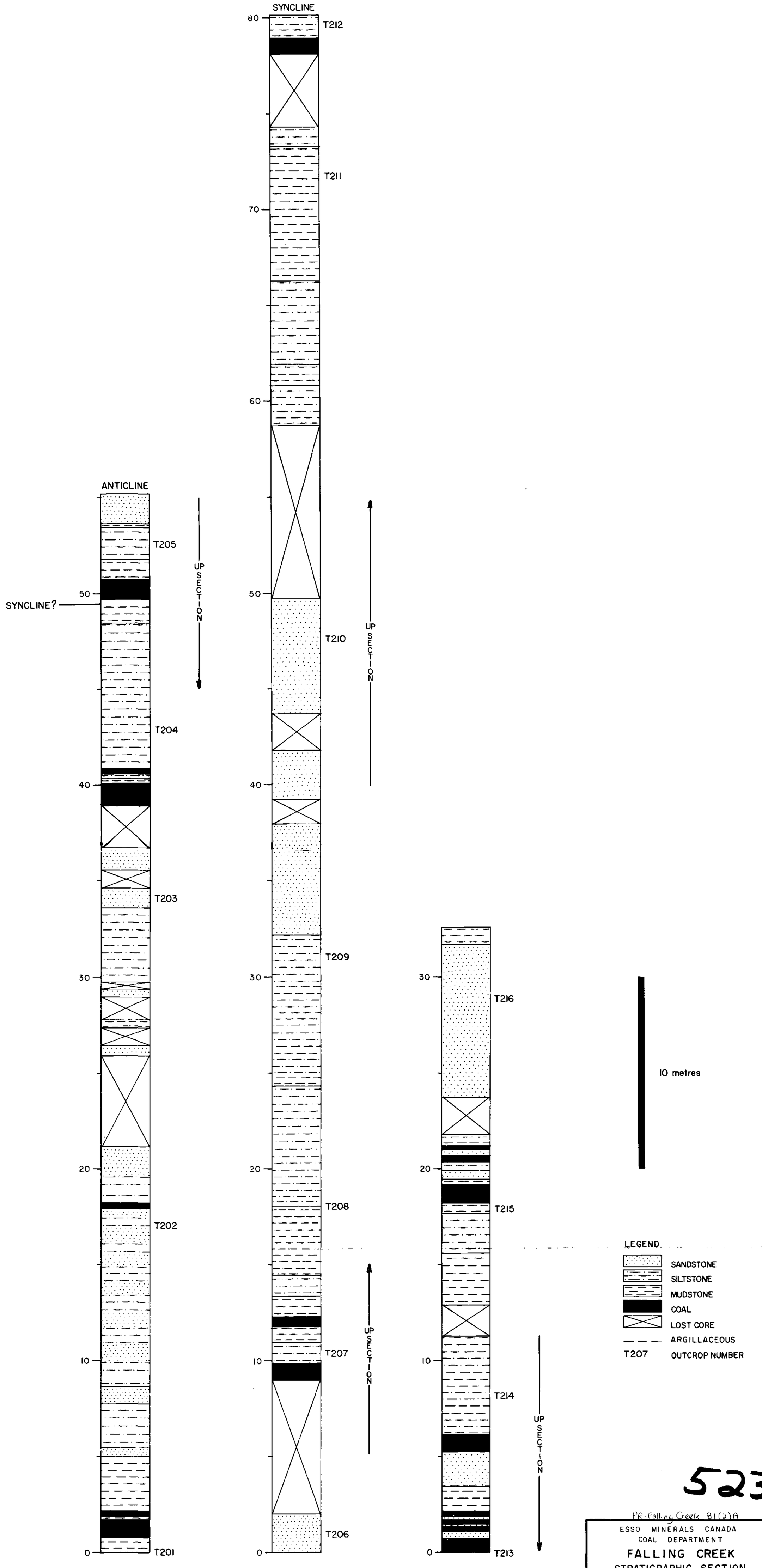
LEGEND

- SANDSTONE
- SILTSTONE
- MUDSTONE
- COAL
- CARBONACEOUS
- SILTY
- COALY
- CONCRETIONAL

523

PR: Falling Creek 91 (91A

ESSO MINERALS CANADA
COAL DEPARTMENT
FALLING CREEK
TRENCH 91
NORTHEAST LIMB OF ANTICLINE
LOG 91
PAGES 5-16 ON DESCRIPTION SHEETS
FEB. 1982. Figure 63 93-0.8



523

PR Falling Creek 81(2)A

ESSO MINERALS CANADA
COAL DEPARTMENT

FALLING CREEK
STRATIGRAPHIC SECTION
TRENCH 2

Figure 64

FEB. 1982. 93-0 8

FALLING CREEK STRAT SECTION TRENCH 2

PR - Falling Creek 81(3) A
2 of 2

Trench & Borehole
Lithology Logs

GEOLOGICAL BRANCH
ASSESSMENT REPORT

00 523

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
351°	0 - 1.25 m	1.25	0.64	0.85	Mudstone	shaley, carbonaceous, plant rootlets/fragments, sideritic staining on plant fragments, listric surface, concretionary, coaly stringers	
	1.25 - 1.65	0.40	0.20	0.30	Mudstone	silty, fresh - medium dark grey, sideritic plant fragments, thinly bedded, 125/049°	
	1.65 - 2.95	1.30	0.66	0.70	Mudstone	carbonaceous, shaley, concretionary, coal stringers, sideritic plant fragments	
	2.95 - 3.45	0.50	0.25	0.40	Mudstone	silty, thinly bedded, medium dark grey, some sideritic rootlets, iron stained on fractured surfaces, 117°/046°	
	3.45 - 3.80	0.35	0.19	0.25	Mudstone	shaley, slightly carbonaceous	
	3.80 - 4.60	0.80	0.41	0.60	Mudstone	silty, sideritic plant fragments, rootlets, occasionally large coaly plant fragments, 126°/044°, thinly bedded, fresh - medium dark grey, iron staining on fractured surfaces	
	4.60 - 7.65	3.05	1.55		Mudstone	shaley, carbonaceous in places, sideritic plant fragments, rare coaly stringers, concretionary layers, less shaley at base	
	7.65 - 10.20	2.55	1.30		Mudstone	shaley, coaly horizons, sideritic plant fragments, listric surfaces, medium dark grey, sheared appearance at base	
	10.20 - 11.10	0.90	0.46		Mudstone	iron rich, fresh - greyish red, numerous sideritic plant fragments, conchoidal to blocky fracture, coaly stringers and small pods	
	11.10 - 12.80	1.70	0.86		Mudstone	silty, seat earth with 3 (10 cm) horizons of coaly and shaley mudstone	
	12.80 - 13.10	0.30	0.15		Siltstone	finely laminated, pale brown weathered, rootlets and sideritic plant fragments, fresh - medium dark grey concretionary	
	13.10 - 16.65	3.55	1.81		Mudstone	shaley, very carbonaceous with some coaly layers, less carbonaceous at base, iron staining, sideritic in some places	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	16.65 - 20.60	3.95	2.01		Siltstone	almost a very fine sandstone, iron staining, coaly and carbonaceous plant fragments, very well indurated in places thinly bedded, 132°/042°, faintly laminated, rootlets, fresh = medium grey, weathered = pale brown to medium	
003°	20.60 - 24.40	3.80	1.93		Mudstone	silty, with silty horizons which have iron rich laminae, thinly bedded, shaley and also iron rich horizons, noteable lack of plant fragments and rootlets, concretionary	
	24.40 - 26.50	2.10	1.83		Coal	top 0.60 m approximately is dirty coal, middle 0.50 m good coal, underlain by shaley mudstone and carbonaceous with typical sideritic plant fragments	
	26.50 - 30.30	3.65	2.06		Interbedded Siltstone/ Mudstone	(silty), siltstone is faintly laminated, 130 at 44° concretionary, iron staining, thin to medium bedding	
	30.30 - 30.70	0.40	0.23		Coal	dirty, deeply weathered	
	30.70 - 34.20	2.50	1.41		Mudstone	carbonaceous, sideritic plant fragments abundant, silty mudstone horizon, this is interbedded with non-carbonaceous mudstone as above, abundant coaly lenses	
	34.20 - 34.90	0.70	0.40	0.30	Coal	deeply weathered, upper and lower contacts are gradational, coal looks quite bright	
	34.90 - 39.40	4.50	2.54		Mudstone	top half, iron rich with weathered = tan, fresh = medium grey, blocky to concholdal fracture, numerous rootlets, carbonaceous plant fragments, seat earth, grades into siltstone/very fine sandstone, siltstone = laminated, medium bedding, sandstone fresh is steel grey (medium grey to blue grey), weathered = pale brown, 130°/043°, abundant micas, coaly plant fragments on bedding surfaces, occasional rootlets at base of unit, mudstone grading into carbonaceous mudstone	#1
	39.40 - 40.35	0.95	0.54	0.60	Coal	deeply weathered, looks bright, homogeneous unit	
	40.35 - 42.20	1.85	1.04		Mudstone	blocky fracture, silty (laminated) horizon in middle, abundant rootlets, fresh=brownish grey weathered=pale brown	120°/040

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	42.20 - 43.15	0.95	0.54		Coal and Mudstone	parting underlain by carbonaceous mudstone with coaly stringers	
027°	43.15 - 52.40	9.25	5.70		Mudstone	grading into siltstone, carbonaceous and iron staining on bedding surfaces, siltstone faintly laminated, well indurated, thinly bedded, 137°/037°	
	52.40 - 52.90	0.50	0.31		Mudstone	(carbonaceous) and dirty coal, very shattered, abundant sideritic plant debris	
	52.90 - 53.25	0.35	0.25		Mudstone	blocky fracture, abundant rootlets, fresh = grey brown weathered = tan	
	53.25 - 53.60	0.35	0.25		Coal	Dirty and carbonaceous mudstone	
	53.60 - 54.35	0.75	0.46	0.60	Siltstone	laminated, rootlets	
	54.35 - 55.25	0.90	0.66	0.70	Coal	no parting, wet and weathered, appears dull, not much variation, dirty in top 8 cm , some shear, powdery	# 2
	55.25 - 55.80	0.55	0.40	0.35	Mudstone	shaley to blocky fracture, carbonaceous, weathers pale brown, plant fragments on bedding surfaces, transitional contact	
	55.80 - 58.20	2.40	0.92	1.25	Siltstone	131°/039°, 132°/050° grades to very fine grain sandstone in middle .50 m, finely laminated throughout, fresh color-medium grey, weathers pale brown, thinly bedded, plant fragments rare, transitional contact	
	58.20 - 58.80	0.60	0.31	0.45	Mudstone	grades downward from blocky shaley, iron-rich concretion at top and bottom, bottom half is carbonaceous, plant fragments (some are iron stained), one coaly plant fragment near top, brownish grey fresh color at top, weathers pale brown	
	58.80 - 59.75	0.95	0.67	0.80	Siltstone	which grades to very fine grained sandstone in center, laminated, fresh color medium dark grey, weathers to pale brown to tan (also shades of tan, rust, brown and pale brown), one horizon has orange plant fragments, thinly	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
						Siltstone (continued) - bedded, blocky fracture	
	59.75 - 60.70	1.05	0.74	0.80	Mudstone	splintery fracture becoming shaley towards the base, carbonaceous especially towards bottom half, coaly partings in bottom half, a few plant fragments, 2 sharp contacts	
	60.70 - 61.25	0.55	0.31	0.45	Siltstone	slightly sandy, tan weathering, laminated, fresh color medium grey, rootlet, coaly plant fragment (large), coaly stringers that cross-cut bedding are probably coalified roots, medium bedding, sharp contact	
	61.25 - 62.75	1.50	1.06	1.15	Interbedded Mudstone/ Siltstone	mudstone- blocky fracture, not carbonaceous, some coaly and some orange plant fragments, brownish grey, weathers pale brown, siltstone- laminated, appears to lens in and out, siltstone ranges from 25 cm - 5 cm thick, weathers pale brown, fresh color medium dark grey, gradational contact	
	62.75 - 65.45	2.70	1.96	2.35	Siltstone/ Sandstone	very fine sandstone with occasional mudstone horizons at top of the bottom half, concretions below the second mudstone, fines towards the base and contains concretions at the base, occasional rootlets sandy horizons near top, mudstone brownish grey, weathers pale brown, sandstone and siltstone are medium grey and weather pale brown, 129°/048°, gradational bottom contact	
	65.45 - 68.90	0.55	0.40		Mudstone	silty in places, carbonaceous at top and bottom, medium dark grey fresh color, weathers greenish to green grey, blocky to splintery fracture, occasional coaly plant fragments and orange plant fragments, bottom has more abundant orange plant fragments, gradational contact	
	68.90 - 69.20	0.30	0.22	0.25	Coal	dirty, weathered, no cleat, ?sheared	
	69.20 - 69.50	0.30	0.22		Mudstone	rootlets, medium dark grey, weathers brown, some rootlets are orange and some are coaly, occasionally large coaly rootlets, gradational lower contact	

E16.4:116

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
038°	69.50 - 71.2	1.70	1.40	1.65	Siltstone	medium grey fresh, tan weathering, 2cm coaly layer on bedding, some orange plant fragments, some laminated horizons, mudstone band in centre, lower siltstone is laminated, mudstone is concretionary, has abundant plant fragments and conchoidal to blocky fracture, also mudstone contact gradational	
	71.2 - 72.1	0.90	0.74	0.83	Coal	split (30cm) in centre = coaly mudstone weathers yellow grey, shaley parting and orange plant fragments, coal weathered, wet, powdery, <2cm thick bright bands, bottom 1/2 seam very dirty, top good coal approximately 35 cm	
	72.1 - 79.8	7.70	6.35		Mudstone	with siltstone beds, non carbonaceous, medium grey, very fine blocky fracture, small blocky at top, siltstone is all blocky, centre shaley, orange staining on fracture surfaces, rootlets, occasional plant fragments (carbonaceous), siliceous veining at .75m, base of unit partially obscured, carbonaceous mudstone at bottom, sharp contact	
	79.8 - 82.8	3.0	2.48	1.5	Sandstone	very fine grained, medium light to very light grey, buff, blocky, thin beds, some carbonaceous fragments, homogenous, 2-5cm thick mudstone bands, rootlets, thin bedded bands with shaley partings near base, gradational, 132°/57°, 135°/055°	
	82.8 - 97.5	1.47	12.13		Mudstone	with occasional silty layers, variable fracture, blocky - shaley - massive, non-carbonaceous, large iron concretions near top and base, medium light grey - olive grey to light grey weathering, occasional orange staining on fracture surfaces, notable lack of plant remains, gradational contact	
	87.5 - 102.5	5.0	4.13		Sandstone/ Siltstone	very fine grained sandstone above and siltstone below, sandstone = medium grey to tan, thin beds, no lamination, rare carbonaceous or plant material, dirty, siltstone = medium grey to light grey, splintery, occasional carbonaceous fragments material at base, sharp contact	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
022°	102.5 - 114.0	11.5	8.05		Sandstone	134°/049° fine upper, some medium lower size grains, homogenous, massive, non-calcareous, faintly laminated, orange weathering color - looks like matrix weathering, salt and pepper, extremely hard, thickly bedded, occasional coaly plant fragments especially on bedding planes, powders to a white color	
043°	114.0 - 120.0	6.0	4.52		Siltstone	coaly plant fragments, slightly carbonaceous, medium dark grey, weathers light brown to pale brown, concretionary layer in the middle, 10 cm below concretionary layer is a coalified plant horizon, bottom half of unit has numerous coaly horizons, siltstone more carbonaceous towards bottom, at base concretionary horizon that weathers bright orange (tan)	
	120.0 - 120.95	0.95	0.72		Sandstone	very fine, abundant rootlets, tan weathered on fracture surfaces, light grey fresh color, weathers pale brown orange speckles, base is laminated and becomes very iron rich and concretionary, coaly plant material abundant on some bedding planes, sharp contact at base	
	120.95 - 121.70	0.75	0.56	0.40	Coal	5cm coal, 10cm carbonaceous mudstone, 25cm coal, coal appears bright and sheared	
	121.70 - 122.85	1.10	0.83		Siltstone	finely laminated, micaceous bedding surfaces, abundant rootlets, abundant orange fern plant fragments and leafy plant fragments, weathers light grey, tan, pale brown, fresh color, medium grey, BASE OF UNIT, 20 cm of shaley carbonaceous mudstone, orange plant fragments, gradational contact	
	122.85 - 123.30	0.45	0.33	0.30	Coal	5 cm shaley and carbonaceous mudstone parting in middle, thins and thickens, coal is sheared	
	123.30 - 124.1	0.80	0.60		Siltstone	faintly laminated, abundant rootlets (same as from 121.75 - 122.85)	
	124.1 - 124.3	0.20	0.15		Mudstone	carbonaceous, shaley	
	124.3 - 125.85	0.55	0.38		Siltstone	(as described in 121.75 - 122.85), top is very muddy with abundant rootlets, bottom is more massive with some thick beds, very hard, 141°/043°	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	125.85 - 128	2.15	1.47		Mudstone	carbonaceous, coaly stringers, top 10cm is silty, shaley, looks sheared, non-carbonaceous, (i.e. siliceous) mineralization on fracture surfaces, sharp contact	
	128.0 - 128.65	0.65	0.44		Sandstone	very fine grained, extremely hard, medium dark grey, iron stained matrix, massive, thickly bedded, sharp contact	
	128.65 - 129.3	0.65	0.41		Siltstone	medium grey, blocky fracture, not laminated, rootlets, concretionary bands, weather pale brown, base obscured by till	
	129.3 - 141.7	12.4	8.4		Overburden		
020°	141.7 - 148.0	6.3	1.56	1.4g	Mudstone	carbonaceous, orange plant material, carbonaceous plant fragments, fracture is splintery to shaley, interbedded shaley and splintery mudstone, splintered is more resistant, thin bedded, 061°/014°	
	148.0 - 148.3	0.3	0.07	0.24	Siltstone	fresh color is light brown to pale brown, weathers medium light grey, medium bedded, hard and resistant, well laminated, rootlets, sharp contact with mudstone above, 320°/019°, 305°/012°	
	148.3 - 153.6	5.3	1.31	1.04	Mudstone	crackle fracture, some horizons are carbonaceous, some with shaley fracture, abundant orange and carbonaceous plant fragments, coal stringers, (cross-cuts bedding), top and bottom contacts are sharp	
	153.6 - 166.2	12.6	3.11	0.95	Siltstone	coarse, medium light grey fresh, very light grey weathered, blocky fracture, occasional carbonaceous plant fragments, thin bedded, iron stained concretions in middle, top contact gradational to mudstone	
	166.2 - 168.1	1.9	0.47		Mudstone/ Siltstone	medium grey, non carbonaceous, occasional laminations, blocky fracture, some silty layers, covered in middle, siltstone = medium dark grey, pale brown weathering, orange staining on fracture surfaces, thin bedded, sharp contact at top	

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TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
	168.1 - 169.9	1.8	0.44		Mudstone/ Shaley Coal	mudstone- shaley fracture, medium dark grey, carbonaceous plant fragments, orange staining on fractures 60% mudstone, 40% shaley coal, each interbed is 5-10cm thick shaley coal- abundant plant fragments, bright 1mm thick coal bands, orange staining on fractures, sharp contact at top	
	169.9 -172.7	2.8	0.69		Siltstone	grades from fine siltstone at base to sandy siltstone at top, fresh is medium grey, weathering to brownish grey, orange staining, shaley fracture to blocky fracture, some horizons are finely laminated, concretions at base, occasional carbonaceous plant fragments throughout, gradational contact at top, very thinly to medium bedded at top, rootlets are coalified	
028°	172.7 - 177.9	5.2	2.46	2.0	Siltstone/ Mudstone	siltstone- medium dark grey, some orange plant fragments, abundant carbonaceous plant fragments, occasional sands, grades back and forth from mudstone to siltstone, fracture blocky to splintery, faintly laminated, five coal lenses - discontinuous, the coal varies in thickness, thickest coal is 0.25 m, 307°/026°, thin bedded, gradational at base, sharp contact at top, with coal interbeds	
	177.9 - 179.1	1.2	0.57	0.90	Sandstone	very fine grained, micaceous grains, grades to a siltstone at top, fresh surface is yellow brown, weathers medium grey, faint laminations, well developed root system, rootlets are carbonaceous, orange staining on fractures, blocky fracture, thin (0.05m) mudstone band at top, well developed fining upward sequence, siltstone has carbonaceous plant fragments, sharp contact at top	
	179.1 - 181.9	2.8	1.32	1.8	Siltstone	medium grey, weathered, occasional carbonaceous plant fragments, occasional faint sandy laminae, ironstone concretions throughout, thinly bedded, blocky fracture sharp contact 352°/029°	

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TRENCH LITHOLOGY LOG

Location Co-ordinates	BEGIN	mE 59245	mN 43840
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Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	Amplified	Sample Number
	181.9 - 184.5	2.6	1.23	1.6	Sandstone	medium grey fresh color and weathered color, very fine grained, carbonaceous plant fragments, faint laminations, thinly bedded, iron concretions at base, orange stain on fracture, blocky fracture, faint cross laminations, top 40cm very carbonaceous with abundant plant fragments, coaly stringers and argillaceous, 280°/031°	
042°	184.5 - 196.1	11.6	4.51		Sandstone	same as at 114 m, clean, fine grained, numerous orange grains in matrix, medium light grey, fresh color and weathered color, extremely hard, occasional plant fragments blocky fracture, pronounced jointing perpendicular to bedding, thin bedded, slightly cross bedded, faint laminations, 295°/024°	
061°	196.1 - 203.4	7.3	3.50	5.1	Sandstone	300°/034°, very fine grained, medium grey, faint laminations thin bedded, occasional very thin silty interbed, no plant fragments, orange staining on fracture surfaces, blocky fracture, concretionary at top, orange staining in grains at base, but not at top	
079°	203.4 - 209.9	6.20	2.37	1.30	Sandstone	fine grained to medium light grey, (fresh color to weathered color), large concretionary beds, non-calcareous, thinly bedded, few carbonaceous and orange plant fragments, muddy in places, 282°/040°, very concretionary at top	
	209.9 - 212.7	4.80	1.84	0.90	Mudstone	dark grey, coaly with coaly stringers and bands, carbonaceous, sandy in places, slickensided surfaces, some iron staining, friable, some sulphur staining, very wet and weathered, indistinct bedding, plant fragments	
	212.7 - 218.6	5.90	2.26	2.90	Sandstone	fine to very fine grained, silty at base, fresh color is medium grey, weathered color is light grey, thinly bedded, few iron stained and carbonaceous plant fragments, non-calcareous, iron stained joint surfaces, calcite deposits along joints, joints perpendicular to bedding, rubble at	

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TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.		1
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
						Sandstone (continued) - base, well bedded at top, 272°/040°	
	218.6 - 219.0	0.40	0.15	0.20	Sandstone	muddy, medium light grey, transitional unit	
	219.0 - 221.65	2.65	1.01	1.33	Mudstone	medium grey, carbonaceous, numerous plant fragments, highly broken, a few thin coaly stringers, concretionary in places, a few cm thick coal bands, deeply weathered, friable, iron stained at top	
	221.65 - 223.30	1.65	0.63	0.7	Siltstone	295°/042°, fresh color is brownish grey, weathered color is medium light grey, well and thinly bedded, jointed, joints perpendicular to bedding, carbonaceous plant fragments near base, non-calcareous, iron stained joint surfaces, muddy, contact between this and the mudstone below is gradational, upper contact also gradational	
	223.30 - 226.60	3.30	1.26	1.20	Mudstone	dark grey, very carbonaceous with numerous plant fragments, very thin coaly stringers, concretionary, a few thin 0.06m silty interbeds, friable, broken, bedding indistinct, slightly silty	
	226.60 - 227.10	0.50	0.19	0.30	Mudstone	very carbonaceous, deeply weathered, greyish black - fresh color	
	227.10 - 228.15	1.05	0.40	0.58	Sandstone	fine grained, thinly bedded, fresh color is yellowish brown, weathered color is light brown, iron stained joint surfaces, numerous rootlets and carbonaceous plant fragments, faintly laminated, non-calcareous, joints perpendicular to bedding, 291°/056°, some rootlets and plant fragments cut across laminations	
	228.15 - 228.65	0.50	0.19	0.30	Mudstone	greyish black, platey and friable, carbonaceous with numerous plant fragments, orange staining on bedding surfaces	
	228.65 - 229.45	0.80	0.31	0.36	Sandstone	very fine grained, medium grey (fresh color and weathering color), carbonaceous plant fragments, iron stained joint surfaces, non calcareous, highly broken, bedding indistinct, muddy at top	

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TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.		1
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
	229.45 - 232.00	2.55	0.98	1.45	Mudstone	dark grey, carbonaceous, friable, silty mudstone interbeds (0.30 m) with thin coal lenses, very coaly at top	
	232.0 - 233.00	1.0	0.38	0.59	Coal	very muddy; highly weathered and powdered, sheared; mostly dull with a few bright stringers.	#3
	233 - 233.30	0.30	0.11	0.22	Mudstone	deeply weathered, yellowish brown - fresh; weathered = yellowish brown to buff, some very fine sand laminae, carbonaceous plant fragments, some orange stained plant fragments, highly broken.	
	233.3 - 234.90	1.60	0.61	0.79	Sandstone	very fine grained, medium bedded, fresh = weathered = yellow brown, iron-stained on joint surfaces, muddy in places, non-calcareous, (300/54°).	
	234.9 - 236.65	1.75	0.67	0.60	Mudstone	carbonaceous and dark grey at base, sandy and hard at top, numerous carbonaceous plant fragments, minor orange plant fragments, highly broken.	
	236.65 - 240.40	3.85	1.47	2.10	Mudstone	very carbonaceous, friable, coaly and silty in places, concretionary at top, dark grey to brown = fresh, breaks into blocks at base and plates at top.	
	240.4 - 241.20	0.80	0.31	0.40	Siltstone	dark grey = fresh, muddy, well-bedded, medium beds, carbonaceous plant fragments, (301/40°); non-calcareous.	
	241.2 - 250.10	8.90	3.41	4.20	Mudstone	slightly silty in places, yellow brown = fresh, carbonaceous, concretionary, hard, well-bedded, medium bedding, (300/45°).	
080°	250.1 - 252.70	2.60	1.00	1.40	Mudstone	very carbonaceous, black = fresh, coaly in places, numerous plant fragments and rootlets, silty in places (hard as opposed to friable mudstone).	
	252.7 - 257.55	4.85	1.58	1.80	Sandstone	with silty interlaminae, carbonaceous, rootlets cut across laminations, thinly bedded, jointing perpendicular to beds, non-calcareous, (288/57°).	
085°	257.55 - 260.65	3.10	1.01	1.10	Mudstone	dark grey, very carbonaceous, numerous plant fragments, concretionary bands (0.05 m), orange plant remains, hard and silty in places.	

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COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
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Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION: Main	LITHOLOGIC DESCRIPTION: Amplified	Sample Number
	260.65 - 262.65	2.00	0.65	0.75	Mudstone	dark grey, very carbonaceous, numerous plant fragments, weathered and slickensided surfaces, coaly.	
	262.65 - 264.80	2.15	0.70	1.10	Coal	dull with bright bands, sheared, powdery, slightly muddy, no splits.	#4
	264.80 - 272.1	7.3	2.37	1.75	Mudstone	dark grey, non-calcareous, weathers pale brown, indistinct bedding at base, thinly bedded in middle, jointed and iron-stained on joint surfaces (perpendicular to bedding) - yellow brown weathering in middle - becomes carbonaceous at top	
	272.1 - 273.4	1.3	0.42	0.60	Coal	muddy, dull, orange plant fragments, gradational at base with carbonaceous mudstone (also at top)	
	273.4 - 277.1	3.7	1.20	2.8	Mudstone	carbonaceous, orange plant fragments, dark grey, indistinct bedding, 20 cm muddy coal interbeds.	
	277.1 - 277.7	0.60	0.19	0.2	Mudstone	non-calcareous, fresh is greyish brown, orange plant fragments, weathers light brown, blocky, coaly stringers.	
	277.7 - 281.15	5.45	1.77	2.7	Mudstone	medium dark grey, non-calcareous, orange plant fragments, very carbonaceous stringers, indistinct bedding, concretionary bands, iron staining on fractured surfaces, concretionary at top.	
	281.15 - 284.1	0.95	0.31	0.4	Sandstone	hard, carbonaceous, very fine grained, carbonaceous laminae, medium dark grey, carbonaceous and orange plant fragments, thinly bedded, poorly bedded, (290/49°).	
	284.1 - 284.8	0.7	0.23	0.25	Mudstone	soft, unconsolidated, wet, weathered, brownish grey fresh and weathered, 10 cm of wet weathered mudstone grading into this at base, also grades into harder, medium grey mudstone in top 2/3, hard mudstone is carbonaceous, orange plant fragments, indistinct bedding, highly weathered.	
	284.8 - 285.3	.50	0.16	0.29	Coal	dull with some bright bands (2mm), orange plant fragments.	
	285.3 - 285.9	.60	0.19	0.22	Mudstone	carbonaceous and orange plant fragments, medium dark grey, thinly bedded and platey, weathers light brownish grey, non-calcareous, minor carbonaceous plant fragments.	
	285.9 - 286.7	0.8	0.26	0.45	Coal	same as coal below.	

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TRENCH LITHOLOGY LOG

Location Co-ordinates	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	286.7 - 287.85	1.15	0.37	0.55	Mudstone	greyish brown, slightly carbonaceous, orange plant fragments, non-calcareous, hard, thinly bedded, poorly bedded.	
	287.85 - 288.75	.9	0.29	0.25	Mudstone	silty (slightly), friable, indistinct bedding, minor carbonaceous plant fragments, medium dark grey, non-calcareous.	
	288.75 - 292.3	3.55	1.15	1.10	Coal	muddy coal band @ base (10cm) - gradational contact, wet, weathered, with bright bands, dull, powdery.	#5
087°	292.3 - 300.5	8.2	2.25	2.4	Sandstone	(300°/037°, 280°/034°, 298°/039°, 296°/038°). medium grey, weathers brown grey. medium bedded sandstone at base, thin bedded, and very fine grained silty sandstone at top, silty sandstone - has shaley partings which are carbonaceous, otherwise little carbonaceous matter, blocky weathering with platey thin bedded - weathering at top, cross-bedded, sharp contacts, cross-laminations in silty sandstone, joints perpendicular to bedding in 2 directions.	
	300.5 - 310.1	9.6	2.64	2.1	Coal	weathered, probably dull banded, very slickensided, sheared in middle, carbonaceous mudstone splits (each 10 cm), mudstone split has quartz stringers, contact between sandstone and coal at base is obscured by till, coal is cleated in places.	#6
	310.1 - 317.5	7.4	2.03	2.0	Sandstone	(284°/38°), (294°/038°), (303°/044°). medium grey, yellow brown weathering, very fine grained, laminated, silty cross-laminated, silty layers, thinly bedded at top, silty layers have concretions, splintery fracture, medium-bedded at base, blocky fracture, very little carbonaceous material, occasional orange plant fragments on bedding surfaces, joints (2 directions) perpendicular to bedding, carbonaceous, very carbonaceous base, gradational from coal to carboncaeous mudstone to carbonaceous sandstone	

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TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
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Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
087°	317.5 - 321.7	4.2	1.13		Mudstone	with some silty blocks, fracture bands, carbonaceous crackly fracture bands and coaly bands, occasional concretions and concretionary bands. bottom: weathers pale brown, pale brown on fresh, occasional plant fragments, orange staining on bedding surfaces - blocky to crackly, sharp lower contact, generally thin bedded, not very carbonaceous, occasional silty layer, occasional concretions, medium grey fresh color in center of unweathered blocks.	
	321.7 - 322.7	1.0	0.23	0.1	Mudstone	very carbonaceous, plant fragments, dark grey (10 cm True Thickness).	
	322.7 - 324.5	1.8	0.48		Mudstone	same as bottom (pale brown).	
	324.5 - 327.0	2.5	0.67	1.0	Mudstone	very carbonaceous with coal stringers, abundant orange staining and abundant orange plant fragments, 3 bands that lens in and out and vary in thickness (approximately 1 m true thickness), in pale brown mudstone - becomes more carbonaceous, more orange stained plant fragments.	
	327.0 - 328.2	1.2	0.32	0.4	Mudstone	becomes silty, more resistant, medium bedded, blocky, occasional carbonaceous plant fragments (40 cm true thickness), overlain by 3 cm of coaly mudstone.	
	328.2 - 328.7	0.5	0.13		Overburden		
	328.7 - 333.9	5.2	1.40	0.5	Mudstone	very coaly, irregular shaped to lensing, orange staining, badly weathered, covered at base, approximately .5m thick, overlain by pale brown mudstone, occasional small concretion and occasional plant fragment (20 cm), overlain by approximately 8 cm of carbonaceous mudstone, overlain by 30 cm non-carbonaceous pale brown mudstone, occasional coalified rootlets, orange staining, joints - 2 directions, perpendicular to bedding, blocky.	
	333.9 - 335.2	1.3	0.35	0.2	Mudstone	medium dark grey, carbonaceous band (20 cm), overlain by carbonaceous band, not coaly, overlain by pale brown	

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TRENCH LITHOLOGY LOG

Location Co-ordinates	BEGIN	mE 59245	mN 43840
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Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
						mudstone, overlain by coaly mudstone, bright coal stringers cut bedding, lensing, overlain by medium dark grey shaley and splintery mudstone, thinly bedded, orange staining on bedding planes, concretions at the top.	
	335.2 - 342.1	6.9	1.86	1.0	Mudstone	pale brown as above, medium bedded, faint carbonaceous and iron stained laminations, extremely weathered, rare rootlets (297°/030°, 295/033°) very orange stained at base (@ 342.1 m).	
	342.1 - 345.2	3.1	0.83		Mudstone	pale brown, as above, concretionary layer at top, thin band overlain by coaly, carbonaceous mudstone, varies in thickness, (lens), shaley, overlain by splintery shaley mudstone, 10 cm concretionary band, Notes: see cycles of coaly mudstone overlain by splintery mudstone re-occurring.	
	345.2 - 348.5	3.3	0.89	0.15	Mudstone	well indurated, hard, slightly silty, light grey weathering, fern plant fossils, splintery fracture, conchoidal, thinly bedded, carbonaceous bedding surfaces, faintly laminated, soft carbonaceous layer at base, (290°/046°), sharp contact.	#7
	348.5 - 350.8	2.3	0.62	0.65	Siltstone	medium grey fresh color and weathered color, blocky to splintery, occasional carbonaceous plant fragments, thinly bedded, occasional coalified rootlet with orange staining (crosscutting bedding), gradational contact.	
	350.8 - 352.0	1.2	0.32		Mudstone	carbonaceous, coaly, heavily weathered, irregular fracture, badly broken, grades to coal.	
064°	352.0 - 354.4	2.4	0.94	1.48	Coal	mudstone clasts, weathered, overburden obscures outcrop, grades upward to carbonaceous coal, mudstone becomes less carbonaceous.	#8
	354.4 - 354.6	.20	0.08		Mudstone	orange plant fragments and coaly plant fragments, dark grey	
	354.6 - 355.1	.50	0.20		Mudstone	coaly, coal bands up to 5 cm thick, gradational contact.	
	355.1 - 355.4	.30	0.12		Mudstone	carbonaceous, not coaly, sheared, dark grey.	

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TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
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Location Co-ordinates	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	Amplified	Sample Number
	355.4 - 355.7	0.3	0.12		Mudstone	coaly, coal stringers, (bright) 3mm thick	
	355.7 - 356.2	0.5	0.20		Mudstone	orange plant fragments, pale brown, orange stained fracture and bedding surfaces, crackle weathering, concretions	
	356.2 - 357.6	1.40	0.45		Mudstone	carbonaceous, plant fragments abundant, bedding destroyed due to shearing, brown to dark grey, abundant orange staining	
	357.6 - 357.9	0.3	0.12		Mudstone	coaly	
	357.9 - 358.7	0.8	0.31		Mudstone	pale brown, carbonaceous and orange plant fragments, slickensides (numerous and sheared), bedding obliterated, coaly rootlets	
	358.7 - 359.2	0.5	0.20		Mudstone	coaly, numerous coal stringers, gradational contact.	
	359.2 - 350.1	0.9	0.35		Siltstone	splintery, medium grey, occasional plant fragments, abundant slickensides, grades to mudstone at top	
	350.1 - 350.6	0.5	0.20		Mudstone	coaly, orange staining on joints, bedding sheared but visible, slickensided (faulting or shearing)	
	350.6 - 363.4	2.8	1.10		Mudstone	medium dark grey, occasional plant fragments, spikey and irregular fracture, orange iron stain, varies in color to pale brown (weathered), some large concretions, gradational at top	
	363.4 - 364.4	1.0	0.39		Siltstone	medium grey, rare plant fragments, iron staining on joints and fractures, splintery to crackly fracture, gradational at top	
	364.4 - 367.3	2.9	1.14		Mudstone	dark grey, occasional coal stringers, plant fragments, concretion layers or horizons, varies from dark grey to pale brown, thinly bedding, poorly developed because of fracturing, splintery to cracky fracture, gradational at top, carbonaceous and orange plant fragments at top	

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TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

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Map Area	C2

TRENCH NO.		1
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	367.3 - 385.6	18.3	7.20	10.0	Sandstone	297°/035°, 280°/034°, 281°/039°, pale brown to medium grey, abundant cross laminations, medium bedded, rare muddy interbeds, blocky fracture, very fine grained to coarse silt, rare plant fragments, at top - coaly mudstone interbeds mm's - 5 cm thick, coalified tree trunk, coal rootlets and coalified plant, tree material at top, orange staining, grades to carbonaceous muddy siltstone at top with plant fragments at top, well bedded, thinly bedded at top.	
	385.6 - 386.7	.9	0.35		Coaly Mudstone	carbonaceous, dark grey, coaly plant fragments, shaley mudstone interbeds.	
	386.7 - 407.0	3.3	1.30		Mudstone	medium grey to pale brown, orange staining on joint surfaces, blocky fracture, thinly bedded, rare rootlets (coalified), some plant fragments, dark grey, shaley mudstone band at 42.5 m (10 cm thick), dark grey, coaly mudstone band (10 cm thick), concretionary horizons, thin coaly mudstone bands become more numerous at top.	
050°					Overburden		
031°	407.0 - 487	80.0			Overburden		
031°	487.0 - 516.3	29.3			Overburden		
	516.3 - 516.8	.50	0.24		Mudstone	medium grey, highly broken, deeply weathered	
	516.8 - 517.2	.4m	0.19		Coal	bright banded, crispy, good cleat, sheared surfaces, very thin muddy bands at the top.	
	517.2 - 518.0	0.80	0.38		Mudstone	coaly, carbonaceous, medium grey, occasional 1 cm bright coal bands, bedding is deformed, yellow stain on some surfaces.	
	518.0 - 523.0	5.0	2.37		Coal	looks like good coal but structure?	#9

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 59245	mN 43840
	END	mE 59660	mN 44225

Project	Falling Creek
Map Area	C2

TRENCH NO.		1
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
037°	523.0 - 525.5	2.5	1.19	1.6	Mudstone	silty, medium grey, yellow stained, sandy in places, irregular blocky fracture, finely laminated where it is sandy, rootlets, iron stained, coaly stringers, thin coaly bands throughout, (305°/031°), thinly bedded, becomes more coaly towards the top.	
	525.5 - 526.9	1.4	0.66	0.78	Coal	dull banded, sheared, crispy, cleaty in places	#10
	526.9 - 527.2	0.30	0.14	0.22	Mudstone	grey brown, silty interlaminations, very thinly bedded, slightly carbonaceous at base.	
	527.2 - 527.5	0.30	0.14	0.25	Sandstone/ Siltstone	sandstone is fine grained, interlaminated, medium grey and light brownish grey, very thinly bedded, fine carbonaceous partings.	
	527.5 - 540.3	12.8	6.07		Sandstone/ Siltstone	interbedded, very fine grained sandstone, thinly bedded, weathers pale brown, iron-stained in places, few cross-laminations, occasional concretions, occasional coaly bands (1-2 cm thick) in places, carbonaceous tree trunk (thin), grain size generally increases upward (290/032°).	
	540.3 - 542.8	2.5	1.19		Sandstone	fine grained medium grey to tan, finely laminated, cross-laminated, thinly bedded, deeply weathered, occasional carbonaceous stringers.	
	542.8 - 543.5	0.7	0.33	0.45	Sandstone	as before, with interlaminations of carbonaceous and coaly material.	
	543.5 - 544.55	1.05	0.50	0.60	Sandstone	fine grained as before, much less carbonaceous, very hard and resistant, laminated and cross-laminated, (1mm -- 2cm cross-beds), truncation indicates right way up, medium grey.	
037°	544.55 - 559.55	15.0	17.11		Sandstone	fine grained thin bedded, medium to tan, deep iron staining weathered, carbonaceous surfaces, laminated and cross-laminated, quite carbonaceous matrix, plant fragments, (297/027°), (312/027°), top is more deeply weathered with large carbonaceous plant imprint.	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	C2

TRENCH NO.	1	
DATE	BEGIN	Aug 13/81
	END	Aug 19/81

Location Co-ordinates	BEGIN	mE 59295	mN 43840
	END	mE 59660	mN 44225

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	559.5 - 596.2	36.7			Covered Interval		
	596.2 - 616.2	20.0			Covered		
063°	616.2 - 636.2	20.0			Covered		
						END OF TRENCH	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2	
DATE	BEGIN	Aug 20/81
	END	Aug 29/81

Location Co-ordinates			
	BEGIN	mE 60400	mN 41910
	END	mE 60775	mN 42175

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
012°	0 - 1.2 m	1.2	0.80		Mudstone	black, coaly with thin (1 cm) bright coal bands throughout, silty at base, carbonaceous, thinly bedded, some iron staining, broken, 283/042°. 1701	
	1.2 - 2.6	1.4	0.94		Coal	bright, hard, good cleat, shiny, sheared and powdery at top, low ash.	1
	2.6 - 2.8	0.2	0.13		Mudstone	dark grey, carbonaceous, orange plant fragments, very friable and broken.	1
	2.8 - 3.3	0.5	0.33		Coal	bright as before, muddy at base.	1
	3.3 - 3.9	0.6	0.40		Mudstone	dark grey to pale brown, carbonaceous, thinly bedded, iron stained, plant fragments, friable, broken.	
	3.9 - 7.6	3.7	2.48		Mudstone	medium grey to pale brown, carbonaceous, thinly bedded, iron stained, plant fragments, hard and resistant, few bright coal bands and lenses, friable in places.	
	7.6 - 8.3	0.6	0.40		Sandstone	medium grey to medium light grey - weathers pale brown, fine laminations and cross-laminations, beds look right way up, medium bedded, muddy interlaminae, few concretions at top, few carbonaceous layers and orange staining.	
	8.3 - 11.75	3.45	2.31		Mudstone/ Siltstone	interlaminated with a few silty interbeds, also some bright discontinuous coal bands (2 cm thick) throughout, carbonaceous, weathers pale brown, same on fresh surface, orange stained plant remains, very thinly bedded, highly broken.	
	11.75 - 13.05	1.3	0.87		Coal	bright with dull bands, powdery, slightly sheared.	2
	13.05 - 13.5	0.45	0.30		Siltstone	dark grey to yellow brown, thinly bedded, muddy in places, thin (1 cm) dull coal band near base.	

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ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2	
DATE	BEGIN	Aug 20/81
	END	Aug 29/81

Location Co-ordinates	BEGIN	mE 60400	mN 41910
	END	mE 60775	mN 42175

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION: Main	LITHOLOGIC DESCRIPTION: Amplified	Sample Number
	13.5 - 27.05	13.55	9.02		Siltstone/ Sandstone	interlaminated, sandstone is very fine grained, medium grey to yellow brown, thickly bedded, hard, resistant, few thin bright coaly bands, cross-laminated, numerous carbonaceous plant fragments on bedding surfaces, 286/044°, iron-stained, muddy interbeds (very thin) near top.	
010°	27.05 - 27.40	.35	0.23		Coal	bright and good cleat in top half, bottom half is powdered, looks squeezed.	
	27.40 - 31.6	4.2	2.79		Sandstone/ Siltstone	as before with very thin (less than 1 cm) bright coal bands at base.	
						End of first part of trench @ 31.6 m Move over to next trench here.	
054°	31.6 - 33.8	2.2	1.19		Sandstone	very finely grained, medium grey-fresh, thin bedded, few carbonaceous plant fragments, weathers-buff, highly broken.	
	33.8 - 42.1	8.7	4.71		Covered Int.	same orientation as last interval.	
	42.1 - 43.1	1.0	0.54		Sandstone	very poor exposure, fine grained, carbonaceous plant fragments, iron stained, pale brown, weathers-buff, laminated, concretionary, poorly bedded.	
	43.1 - 44.8	1.70	0.92		Covered Interval		
	44.8 - 45.5	0.8	0.43		Mudstone	dark grey, slightly silty, highly broken, exposed in bottom 5 cm of trench, thin bedded, iron stained, a few carbonaceous plant fragments.	
	45.5 - 47.7	2.2	1.19		Covered Interval		
	47.7 - 48.4	0.7	0.38		Sandstone	very finely grained, finely laminated, fresh-pale brown, weathers-light brown, few carbonaceous layers and plant fragments, iron-stained, medium bedded.	
	48.4 - 49.1	0.7	0.38		Covered Interval		

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
	49.1 - 53.0	3.9	2.11		Siltstone	muddy, medium light grey on fresh and weathered, highly broken, few carbonaceous and orange stained plant fragments, few concretions, looks thinly bedded, becomes a silty mudstone at top with very carbonaceous lithology, numerous plant fragments.	
	53.0 - 56.3	3.3	1.79		Siltsone	muddy, medium dark grey, faintly laminated, carbonaceous plant imprints and fragments, thin and discontinuous coal bands, medium bedded, weathers - pale brown.	
	56.3 - 58.2	1.9	1.03		Sandstone	fine grained, scour and fill, medium light grey, very carbonaceous, channelled, finely laminated, numerous discontinuous coal bands and lenses, 286/054.	
	58.2 - 59.9	1.7	0.92		Covered Interval	contains thin coaly shale (poorly exposed) bands.	
	59.9 - 62.0	2.1	1.14		Sandstone	fine grained, medium light grey - fresh, weathers - pale brown, thinly bedded, faintly laminated, highly broken, concretionary, few thin carbonaceous shale laminae and bands, few carbonaceous plant fragments.	
	62.0 - 66.0	4.0	2.17		Covered Interval	road fill covers upper contact of next coal.	
	66.0 - 68.2	2.2	1.19		Coal	dull lustrous, deeply weathered and powdery, few bright bands, becomes muddy at top.	
	68.2 - 68.6	0.4	0.23		Mudstone	very carbonaceous, friable, looks sheared, coaly in places.	
	68.6 - 69.1	0.5	0.27		Siltstone	medium grey - fresh, muddy, weathered - light grey, iron stained, highly broken, coaly stringers, slickensided surfaces, bedding indistinct.	
	69.1 - 69.6	0.5	0.27		Coal	muddy, mostly bright, sheared in places.	
	69.6 - 83.6	14.0	7.58		Siltstone	medium dark grey, few carbonaceous plant fragments, some orange staining, muddy in places, few bright coal bands, discontinuous coal lenses (muddy) at base, finely laminated, with carbonaceous interlaminae, thinly bedded, slickensided surfaces, large plant fragments, beds look deformed, 290/042°, some very coaly stems, a few calcite	

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ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
						filled fractures, a few concretions, sandy bands (units), becomes muddy at top.	
037°	83.6 - 84.3	.7	0.68		Mudstone	dark grey, weathers buff, carbonaceous, friable, fractured, numerous carbonaceous plant fragments, sheared, some iron staining, few thin bright coal stringers.	
	84.3 - 84.6	.3	0.29		Mudstone	very carbonaceous, soft, wet, weathered, dark grey.	
	84.6 - 84.9	.3	0.29		Mudstone	silty, medium dark grey, sheared, carbonaceous, hard, thinly bedded, smooth slickensided surfaces, attitude appears to be changing but unable to get strike and dip.	
	84.9 - 86.0	1.1	1.06		Coal	bright and dull, powdery, bright bands display fairly good cleat, about half way through seam get an earthy reddish band (5 cm) of oolitic looking mudstone (?).	3
	86.0 - 86.15	.15	0.14		Mudstone	dark grey to black, very coaly and carbonaceous, friable, looks sheared and squeezed.	
	86.15 - 86.5	.35	0.34		Mudstone	silty, hard, medium grey to buff, iron stained surfaces, thinly bedded, sheared and squeezed, numerous slickensided surfaces.	
	86.5 - 86.8	.3	0.29		Mudstone	as before, coaly and carbonaceous, friable, sheared and squeezed.	
	86.8 - 87.0	.20	0.19		Mudstone	dark grey, weathers buff, sheared, friable, some iron staining, thin bright coaly stringers, carbonaeous plant fragments, very carbonaceous and coaly at top.	
	87.0 - 89.8	2.8	2.7		Siltstone	medium dark grey, iron stained joint surfaces, blocky fracture, weathers buff in places, thinly and regularly bedded, 126/075°, some calcite veinlets, faintly laminated in places, few slickensided surfaces, few carbonaceous mudstone interbeds (3 cm) near top.	
	89.8 - 90.0	.2	0.19		Mudstone	very carbonaceous, black, friable, squeezed (varies in thickness), coaly, slickensided.	

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ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
	90.0 - 91.7	1.7	1.64		Sandstone	very finely grained, medium light grey, numerous calcite veinlets, slickensided surfaces, highly broken, carbonaceous plant fragments and rootlets, few ironstone concretions, beds are starting to flatten out into a small anticline.	
	91.7 - 105.5	13.8	2.00		Sandstone	as above, attitude = 062/014° (trend/plunge) - few faint laminations, measuring more of less along strike, becomes medium bedded - at end of unit, strike and dip is now 302/033°.	
	105.5 - 143.4	37.9	7.0		Covered Interval		
013°	143.4 - 145.0	1.6	0.89		Coal	mostly bright with dull, powdery bands, well developed cleat (crisp), looks like mudstone above it but is covered with overburden, no sample (less than 1 m thick).	
	145.0 - 145.3	.3	0.17		Siltstone	muddy, medium dark grey to pale brown, few faint sandy laminations, few ironstone concretions, carbonaceous at base, uneven fracture, fairly massively bedded.	
	145.3 - 146.9	1.6	0.89		Siltstone	dark grey, weathers buff, few thin concretionary layers, blocky fracture (even), thinly bedded, 308/038°.	
	146.9 - 148.4	1.5	0.84		Mudstone	carbonaceous, dark grey, sheared, friable, weathers pale brown, very coaly, slickensided surfaces, interbedded with bright coal (very thin bands).	
	148.4 - 149.3	.9	0.50		Coal	mostly dull with few bright bands, weathered and powdery, no sample.	
	149.3 - 151.2	1.9	1.06		Mudstone	as before with thin coal bands.	
	151.2 - 153.1	1.9	1.06		Siltstone	dark grey, highly broken, poorly developed bedding, carbonaceous, few very thin muddy interbeds, numerous plant fragments on bedding surfaces, iron staining.	
003°	153.1 - 158.8	5.7	3.62		Mudstone	Mudstone- dark grey, silty, broken into small blocklets, few concretions, fairly hard, thinly bedded 272/036°.	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2

	Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
		158.8 - 169.5	10.7	6.28		Siltstone	dark grey, concretionary, highly broken, thinly bedded, some iron staining, few coaly plant remains, weathers pale brown, few carbonaceous mudstone interbeds (thin) at base and near top.	
		169.5 - 196.4	26.9	7.89		Mudstone/ Siltstone	interbedded, mudstone is pale brown and hard, thinly bedded, faintly iron stained, few concretions, some layers are very carbonaceous and slickensided, also contains some very thin bright coaly stringers, also few very thin carbonaceous shale interbeds, numerous plant fragments between 5 - 8 m mark, concretionary, siltstone - occurs in top half as major lithology, also iron stained and contains some thin bright and discontinuous coal bands. strike and dip = 298/044°, thinly bedded, well bedded.	
		196.4 - 205.5	9.1	5.78		Sandstone	Unit is not well exposed in trench but is a resistant, fine grained sandstone (see notes - B), laminated, hard, medium bedded.	
		205.5 - 207.5	2.0	1.27		Covered	(but do pick up some of the same sandstone in the bottom of the trench in spots) - trench is coming around a corner.	
		207.5 - 211.5	4.0	2.54		Sandstone	Poorly exposed, very hard, medium grained, numerous coaly plant fragments, light grey, concretions in places, very well indurated, few coaly bands (discontinuous).	
*	020°	211.5 - 214.5	3.0	1.91		Covered Sandstone	as before (but finer grained) (azimuth is now = 037°) - at end of outcrop (azimuth is 045°); carbonaceous and muddy in places, well bedded, concretions, iron stained, fine grained, (301/043°) - becomes fine grained after 3m (along trench).	
*		214.5 - 223.5	9.0	6.04				

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COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
* 051°	223.5 - 237.3	13.8	8.95		Covered Interval		
	237.3 - 240.4	3.4	2.20		Mudstone	dark grey, weathers yellow brown, carbonaceous, thin bright coaly stringers, friable, a few thin siltstone interbeds and 3 cm bright coal bands, concretionary at top.	
	240.4 - 241.9	1.5	0.97		Mudstone	pale brown weathering, medium grey fresh color, harder, more massive, slightly silty, some coaly stringers, some iron staining, calcite mineralization on fracture surfaces, breaks into rectangular blocks with some conchoidal fractures.	
	241.9 - 247.6	6.7	4.35		Siltstone	medium grey, weathers yellow-brown, hard, iron stained, medium bedded, concretionary, muddy.	
	247.6 - 248.5	.9	0.58		Mudstone	medium dark, weathers medium dark grey, a few carbonaceous layers, concretionary band at top, thin indistinct bedding, powdery in places, splintery to shaley fracture.	
	248.5 - 253.5	5.0	3.24		Mudstone	pale brown and medium light grey, very concretionary, a few carbonaceous layers, bright coaly stringers, a few carbonaceous plant fragments.	
	253.5 - 258.5	5.0	3.24		Silty Mudstone	(300°/044°), ?? medium light grey, weathers pale brown, concretionary, well bedded, thin bedded, faintly laminated, blocky fracture, iron stained, coaly stringers, becomes very concretionary near top.	
	258.5 - 260.0	1.5	0.97		Siltstone	well bedded, thin bedded, dark grey, thin carbonaceous shale interbeds, numerous carbonaceous and coaly plant fragments, faintly laminated.	

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ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION: Main	LITHOLOGIC DESCRIPTION: Amplified	Sample Number
* 066°							
	260.0 - 267.0	7.0	3.93		Overburden		
	267.0 - 301.5	34.5	.75		Coal	poorly exposed, powdery, dull (pick up on other side of syncline).	
	301.5 - 327.0	25.5	0.5		Mudstone	silty, medium grey, very concretionary, bright coaly lenses (tree roots), rootlets, fractured, 20 cm thick carbonaceous mudstone interbed, carbonaceous plant fragments.	
* 089°							
	327.0 - 367.0	40.0		0.75	Mudstone	ALONG STRIKE with thin carbonaceous interbeds, concretionary, syncline axis (307/50°); siltstone interbeds (30 cm); trench is cutting downsection (144/20°).	
	367.0 - 386.0	13.0	.7m		Coal	hard, bright with dull bands; 0.7 m coal; 0.4 m sandstone split.	5
			.4m		Sandstone	split in coal.	
			.23m		Coal	bright; hard; good cleat.	
			0.09		Sandstone	fine grained, deeply weathered.	
			0.30		Coal	bright, weathered.	
			0.13		Sandstone	As above.	
			0.09		Coal	As above.	5
			0.03		Sandstone	As above.	
			0.70		Coal	As above.	
	386.0 - 389.8	3.8	1.26		Mudstone	greyish black, carbonaceous and coaly, sheared, indistinct bedding, some bright coal bands.	
	389.8 - 398.3	8.5		1.82	Sandstone	very fine grained, light brown, numerous thin bright coal stringers, jointing to bedding.	
				.90	Coal	dull, hard, deeply weathered, muddy, (true thickness <1m).	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
	398.3 - 413.3	15.0	4.98		Mudstone	silty, pale brown, numerous rootlets, carbonaceous plant fragments, iron stained, highly broken, discontinuous coal lenses, faintly laminated, (126/35°), thinly bedded, concretionary in places, interbedded in siltstone, 3:1 (mudstone/siltstone).	
	413.3 - 418.3	5.0	1.66		Covered Int.		
096	418.3 - 427.8	9.5	2.72		Mudstone	medium grey, weathers buff to light brown, thinly bedded, silty in places, iron-stained, concretionary, highly broken.	
	427.8 - 435.0	7.2	2.06		Siltstone	muddy, concretionary, medium bedded, highly broken, light brown on fresh and weathered surfaces, few rootlets.	
	435.0 - 438.3	3.3	.53		Mudstone	dark grey, weathers medium light grey to light brown, carbonaceous, iron-stained, few coaly stringers, thinly bedded, very friable, numerous plant fragments (110/042°).	
	438.3 - 439.7	1.4	1.0		Coal	top half is dull with bright bands, bottom is bright and crisp, top half is powdered.	4
	439.7 - 441.2	1.5	.24		Mudstone	very coaly and carbonaceous, iron-stained in places, very friable, shaley, bright coal bands (0.5 cm)	
	441.2 - 442.2	1.0	.46		Sandstone	fine grained, medium grey, weathers pale brown, iron-stained, carbonaceous plant fragments, coaly rootlets, medium bedded, resistant.	
	442.2 - 443.2	1.0	.46		Mudstone	medium grey, weathers medium light grey to light brown, thinly bedded, highly broken, carbonaceous.	
	443.2 - 444.0	0.8	.37		Coal	dull with bright bands, powdery.	
	444.0 - 444.6	.6	.28		Sandstone?	earthy looking, rust to red colored, oolitic like, very deeply weathered, powdery.	
	444.6 - 444.9	.3	.14		Coal	mostly bright, powdered.	
	444.9 - 446.2	1.3	.61		Mudstone	silty, medium light grey, carbonaceous, iron-stained, plant fragments, highly broken.	

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COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	S3

TRENCH NO.	2

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
	446.2 - 453.2	7.0	3.0		Covered interval	(road fill).	
070°	453.2 - 470.2	17.0	7.95		Sandstone	fine grained, medium light grey to light grey, very hard and resistant, well bedded, medium bedded, some iron-staining, few thin mudstone interbeds, (140/030°).	
	470.2 - 472.2	2.0	0.90		Mudstone	silty, as before.	
	END OF TRENCH						

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COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.		3
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
150°	0 m - 10 m	10m			Overburden	(Going Downsection)	
	10.0 - 10.3 m	0.3	.03	0.05	Mudstone	carbonaceous	
	10.3 - 13.0	2.7	1.0 m		Coal	bright and hard at base, wet and powdery at top	1
	13.0 - 26.6	13.3	1.2	1.7+	Mudstone	silty beds, weathers yellow brown with orange staining, sometimes weathers brownish grey, fresh color to medium grey, mostly thin bedded with some medium beds, abundant iron concretions, occasional 7 cm thick bands or beds of iron stained concretions, plant fragments both orange stained and coaly, wood casts, mainly blocky fracture, sharp contact with coal at base, 166/020°, 170/026° carbonaceous at base.	
	26.6 - 31.9	5.3	.49		Coal	same coal as before because trench is approximately along strike	
135°	31.9 - 33.9	2.0	.35		Covered		
	33.9 - 35.0	1.1	.42		Sandstone	very fine grained, medium grey, thinly bedded, highly broken, carbonaceous laminae, orange staining, plant fragments (carbonaceous and orange), coaly stringers 150/035°	
	35.0 - 37.4	2.4	.42	.25	Mudstone/ Coal	mudstone is very carbonaceous and coaly, sheared, very thinly bedded, plant fragments	
	37.4 - 39.0	1.6	.28		Sandstone	fine grained, pale brown, carbonaceous, rootlets, iron -stained, muddy only get about 20 cm of this then trench cuts back through last mudstone/coal unit	
	39.0 - 44.5	5.5	.96		Mudstone/ Coal	same as previous unit	
	44.5 - 60.0	15.5	2.70	1.1	Sandstone	as before, same sandstone	
	60.0 - 66.0	6.0	1.05		Covered		
	66.0 - 69.0	3.0	.52	.25	Mudstone/ Coal	carbonaceous, sheared, coaly stringers, numerous plant fragments	

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ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	69.0 - 71.6	2.6	.45	.5	Mudstone	slightly silty, hard, thinly bedded, numerous orange and carbonaceous plant fragments on bedding surface, light brown (fresh and weathered), 128/060°, becoming very carbonaceous and shaley at top	
156°	71.6 - 75.6	4.0	.70	1.0	Coal	bright with dull bands, sheared, same as seam #1	2
	75.6 - 76.2	0.6	.90	.4	Mudstone	thinly bedded, some iron staining, well bedded	
	76.2 - 80.5	4.3	.75		Sandstone	very fine grained, light brown, some mudstone interbeds, numerous orange and carbonaceous plant fragments, coaly plant remains, concretions	
	80.5 - 88.5	8.0	1.4		Mudstone	carbonaceous, friable, coaly in places, harder in places, iron stained, numerous plant fragments, few coaly mudstone beds (10cm)	
	88.5 - 91.0	2.5	.44		Sandstone	very fine grained, medium grey, weathers light brown, thinly bedded, hard, rootlets, carbonaceous plant fragments	
152°	91.0 - 130			3.0	Mudstone	carbonaceous as before, coaly in places, along strike true thickness is on the order of 3 m	
	130 - 140				Overburden		
140°	140 - 187				Overburden		
160°	187 - 201				End of trench	(Overburden)	
160°	201 - 223				Not trenched		
204°	223 - 275				Not trenched		
	270 - 275				Pit (Overburden)		
158°	275 - 330				Not trenched		
198°	330 - 359				Not trenched		
	359				Overburden Pit		
198°	359 - 379				Not trenched		
214°	379 - 436				Not trenched		
	436				Overburden Pit		
214°	436 - 451				Not trenched		

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
216°	451 - 457	6.0	2.6		Sandstone	fine grained, medium light grey, weathers buff, exposed along bottom of trench at 452; at 454 for 15 cm or so, bedding indistinct, white mica and occasional small carbonaceous fragments, some iron staining	
	457 - 460	3.0	1.3		Covered	but looks like a resistant sandstone rib, same as above	
	460 - 462	2.0	.87	.86	Mudstone	with siltstone interbeds (15 cm thick), thinly bedded, medium grey, weathers medium light grey, iron staining, carbonaceous and coaly plant fragments on bedding surfaces, numerous carbonaceous partings, (up to 1 cm thick), abundant plant material, (fern fossil) 074/045°	
	462 - 462.9	0.9	.39	.47	Mudstone	numerous plant fragments and some carbonaceous layers, medium grey, iron staining, thinly bedded, rootlets and coaly stringers are abundant	
	462.9 - 463.4	0.5	.22	.40	Coal	highly sheared, mostly dull, powdery	
	463.4 - 463.5	.10	.04		Mudstone	black, very carbonaceous and coaly, orange plant fragments, coaly stringers	
	463.5 - 463.75	.25	.11	.19	Mudstone	silty, medium grey, lots of carbonaceous plant fragments, thin bedded, yellow (? sulphur) stain on fracture surfaces	
	463.75 - 464.6	.85	.37	.60	Mudstone	dark grey, very friable, coaly stringers, carbonaceous plant fragments, iron stained, 5 cm thick concretion band in centre	
	464.6 - 464.75	.15	.01	.10	Siltstone	medium dark grey, iron stained, thinly bedded	
	464.75 - 466.5	1.75	.76		Sandstone	very fine grained, hard and resistant, bedding obscured, abundant carbonaceous plant fragments, medium light grey, orange plant fragments	
	466.5 - 467.1	0.6	.26		Mudstone	medium dark grey, very thinly bedded, numerous plant fragments, orange staining, carbonaceous	
	467.1 - 467.6	0.5	.22		Siltstone	medium grey, rootlets, iron stained bedding surfaces, thinly bedded, highly broken, muddy	
	467.6 - 467.9	0.3	.13		Shale	carbonaceous, very coaly, orange stained, discontinuous bands, lenses, sheared	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	467.9 - 468.1	.20	.1		Siltstone	medium grey, iron staining, numerous plant fragments and rootlets, thinly bedded, highly broken	
	468.1 - 468.3	.20	.1		Mudstone	greyish black, very carbonaceous, coaly stringers, iron staining, shaley in places	
	468.3 - 469.0	0.70	.3		Mudstone	very carbonaceous, not shaley, relatively hard, plant fragments abundant, iron staining, top 10 cm shaley	
	469.0 - 469.4	0.40	.29		Mudstone	greyish black, concretion bands, concretion band at top, slatey fracture, no plant fragments, silica (ie non-calcareous), coated fracture surfaces	
	469.4 - 471.1	1.7	1.2		Siltstone/ Sandstone	interbedded (20 cm thick) medium light grey, iron stained fracture surfaces, no plant fragments	
	471.1 - 472.7	1.6	1.1		Sandstone	fine grained, medium grey, very thin carbonaceous mudstone interbeds, carbonaceous plant fragments and rootlets, thinly bedded, some iron staining, 094°/058°	
217°	472.7 - 473.1	.40	.29	.37	Coal	sheared, mostly bright, top 10 cm is dull to lustrous, powdery	
	473.1 - 473.3	.20	.14		Mudstone	pale brown, carbonaceous, coaly band (2 cm), rootlet cuts across bedding	
	473.3 - 477.6	4.30	3.06		Sandstone	fine grained, medium light grey, rootlets and plant fragments, tan weathered color, hard and resistant, mostly covered, can't see bedding thickness, top 10 cm is very carbonaceous and muddy	
	477.6 - 479.0	1.40	1.0		Siltstone	deeply weathered, tan weathering color, thin beds, plant fragments, few carbonaceous laminae, muddy partings	
	479.0 - 479.2	0.20	.14		Siltstone	rootlets, carbonaceous interlaminae, medium grey, could be same as above but not as deeply weathered	
	479.2 - 479.6	0.40	.28		Mudstone	carbonaceous, shaley and friable, abundant sharply defined plant fragments	
	479.6 - 480.1	0.50	.36		Siltstone	same as before, very fractured	

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COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	480.1 - 480.8	0.70	.40		Siltstone	hard, thinly bedded, lots of carbonaceous plant fragments and rootlets, not as weathered as above unit, olive grey fresh color, iron stained	
	480.8 - 481.7	0.90	.52		Mudstone	shaley and carbonaceous in top 10 cm, weathers tan, hard	
	481.7 - 482.0	.3	.21	.18	Sandstone	very fine grained, silty laminations, medium light grey, very hard and resistant, carbonaceous laminations, medium bedded	
	482.0 - 482.85	.85	.48		Mudstone	shaley, carbonaceous, abundant plant fragments, dark grey iron stained, platey fracture, some coaly stringers	
	482.85 - 488.35	6.5	3.5		Siltstone	yellow brown, thin medium bedding, weathers tan, abundant rootlets, hard, 0.5 m thick sandstone interbedded near bottom, 090/038°	
230°	488.35 - 488.6	.25	.13		Mudstone	greyish black, friable, deeply weathered, shaley, carbonaceous	
	488.6 - 490.1	1.5	.82		Siltstone/ Mudstone	medium grey, weathers pale brown, a few concretions, thinly bedded, orange staining, carbonaceous plant material	
	490.1 - 490.6	.5	.27		Sandstone	fine grained, pale brown, hard, carbonaceous rootlets, carbonaceous plant fragments, faintly laminated	
	490.6 - 491.7	1.1	.60	.20	Mudstone	slightly silty in places, thinly bedded, carbonaceous, orange staining, yellow brown, weathers tan to light grey, abundant plant fragments	
239°	491.7 - 493.3	1.6	.53	0.2	Sandstone	fine grained, light grey, mica flakes, one concretion, thin bedded	
	493.3 - 497.0	3.7	1.22	1.57	Siltstone	carbonaceous laminations, dark grey, tan weathering, mica flakes, bedding rolls - small drag fold, carbonaceous plant fragments, well developed bedding near top, medium bedded, 082°/038°	

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COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.		3
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
	497.0 - 502.6	5.6	1.85		Mudstone	dark grey, thinly bedded, weathers very light grey, iron stained, no plant fragments, concretions, slightly silty in places, non-calcareous mineralization on slickenside surfaces, carbonaceous at top	
	502.6 - 511.0	8.4	2.7		Sandstone	fine (upper) grained, salt and pepper, orange specks, at base - very carbonaceous and dirty with coaly partings (ie scour and fill), sandstone is hard and resistant, thinly bedded at top, becomes finer grained, shaley thin partings, laminated 054/083°, no visible plant fragments, some rootlets	
232°	511.0 - 513.75	2.75	.93		Siltstone	coarse, medium light grey, weathers light grey, rootlets, iron stained, thinly bedded, carbonaceous plant fragments	
	513.75 - 517.95	4.2	1.39		Mudstone	medium grey, weathers medium light grey, carbonaceous, orange staining, concretionary, coaly, some slickensides, lots of plant fragments, shaley near top	
	517.95 - 518.55	.6	.20	.30	Coal	dull with bright bands, weathered, sheared	
	518.55 - 522.4	3.9	1.3		Mudstone	same as from 513.75 - 517.95, silty near top, concretions, plant fragments, coaly in places, splintery fracture	
	522.4 - 523.4	1.0	.33		Siltstone	medium grey, weathers light brown, orange stained and carbonaceous plant fragments, rootlets, muddy, iron stained on fracture surfaces, thinly bedded	
	523.4 - 524.1	.8	.26		Mudstone	silty at bottom, very carbonaceous, dark grey, some orange stained fracture surfaces	
	524.1 - 524.8	0.7	.23	.20	Coal	muddy and dull, sheared shiny surfaces, some thin bright bands	
	524.8 - 525.8	1.0	.33		Mudstone	dark grey, carbonaceous, coaly tree stump and roots, abundant plant fossils, orange staining, thinly bedded, sheared, medium bedded at top, rootlets, weathered pale brown near top	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.		3
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION: Main	LITHOLOGIC DESCRIPTION: Amplified	Sample Number
	525.8 - 526.7	.9	.52		Mudstone	thin coaly interbeds, greyish black carbonaceous, coaly lenses, shaley, hard in places, bottom 20 cm is coaly and shaley, top is thicker bedded and harder	
	526.7 - 527.3	.6	.35	.40	Coal	sheared, dull with bright stringers, thin 5 cm mudstone split, powdery	
	527.3 - 528.1	.8	.46		Siltstone	dark grey, carbonaceous, coaly lenses, medium bedded, iron stained, muddy	
	528.1 - 528.45	.35	.20	.25	Mudstone/ Coal	coal: dull and powdery, mudstone: dark grey and carbonaceous	
	528.45 - 529.20	.75	.43		Siltstone	medium light grey, weathers yellow brown, abundant rootlets, concretionary, highly fractured	
	529.20 - 529.8	.6	.35		Muddy Coal	some bright bands	
	529.8 - 530.0	.2	.12		Mudstone	carbonaceous, pale brown, iron staining	
195°	530.0 - 535.0	4.0	3.4	4.5	Sandstone	sharp lower contact, fine upper medium lower grain size, homogenous, faintly laminated, "Dresser-type", thick bedded, slickensides, iron staining on exposed surfaces, some coaly plant material on bedding surfaces (roots and stems), slickensides are sub-parallel to bedding, ? cross bedding (large scale), some horizons have deep orange iron staining	
	535.0 - 535.3	.30	.25	.25	Coal	badly weathered, powdery, muddy at base and top, dull with lustrous surfaces	
	535.3 - 536.15	.85	.72	.50	Mudstone	slightly silty, deeply weathered brownish grey, orange stained fracture surfaces, carbonaceous partings, thinly bedded highly broken with splintery fracture, carbonaceous	
	536.15 - 536.50	.45	.38	.25	Coal	plant fragments sheared, very muddy, dull with lustrous surfaces, weathered wet and powdery	
	536.50 - 537.40	.90	.76	.59	Mudstone	tan weathering, medium dark grey, abundant carbonaceous plant fragments, concretionary horizon near top, shaley to splintery fracture	
	537.40 - 537.85	.45	. 38	.35	Coal	exactly as 536.15 - 536.50 above	

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TRENCH LITHOLOGY LOG

Location Co-ordinates	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION: Main	LITHOLOGIC DESCRIPTION: Amplified	Sample Number
	537.85 - 553.9	16.05	11.00		"Dresser-type" Sandstone	coaly plant fragments at base, fine upper with some medium grains, homogenous, thickly bedded, partly obscured, deeply orange stained through central portion, likely to have some recessive units, siltstone at 547 m is finely laminated, tan weathering, sandstone is finer grained at top, some units are homogenous, non-laminated, medium grey siltstone, top meter is "Dresser-type" sandstone, top obscured, top "Dresser-type" sandstone, has coaly plant fragments	
186°	553.9 - 558.8	4.9	4.24		Till	trench filled with water	
	558.8 - 562.5	4.7	4.06		Mudstone	10 cm thick sandstone at base, very fine grained, medium grey, abundant coaly plant fragments weathers pale brown, grades into mudstone medium dark grey, splintery fracture, hard at base, orange iron concretionary, not carbonaceous, occasional plant fragments, occasional tan weathered surfaces, have faint laminations, gradational upper contact 094/063°	
	562.5 - 564.2	1.7	1.47	1.10	Siltstone	sandy, medium bedded, homogeneous, thinly bedded silty parting in center, medium dark grey, strong vertical jointing, some joints are calcite filled, weathers pale brown, tan staining on fracture surfaces, sharp upper contact, top 10 cm are slightly carbonaceous 095/060°	
165°	564.2 - 564.7	0.5	.4	.42	Mudstone	top 1/2 is very carbonaceous, bottom 1/2 has a splintery fracture, some listric surfaces, dark grey, weathers medium grey, top 1/2 is shaley and has orange staining on bedding surfaces	
	564.7 - 566.3	1.6	1.17	1.0	Siltstone	partially obscured, blocky fracture, concretionary at base, small rootlet remains abundant at top, upper 1/2 is finely laminated, rootlets grow perpendicular to laminations at top therefore to paleosoil, medium bedded, top has large coaly plant fragments on bedding surfaces	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION		Sample Number
					Main	Amplified	
	566.3 - 566.55	0.25	.18	0.20	Coal	powdery wet dull with some lustrous surfaces, rare thin bright bands, sharp lower gradational upper contact	
	566.55 - 566.90	.90	.26	.28	Coaly/ Mudstone	greyish brown, abundant carbonaceous material, thin coal bands	
	566.9 - 567.80	.90	.66	.65	Mudstone	medium grey, tan weathering, non carbonaceous, well bedded thin rare plant material, blocky fracture	
	567.8 - 568.45	.65	.48	.60	Siltstone	medium grey fresh to medium light grey weathered, well to medium bedded, homogeneous very faint lamination, minor orange staining occasional rootlets, 111/065°	
	568.45 - 568.70	.25	.18	.22	Mudstone	very carbonaceous, greyish black, abundant plant material shaley to splintery fracture	
	568.7 - 569.15	1	.73	.50	Mudstone	silty in places, medium grey, weathers pale brown with tan staining on fracture surfaces, siltstone 10 cm bed at top	
	569.15 - 570.25	1.10	.80	.90	Siltstone	bottom 10 cm are shaley and have coaly stringers in them overlain by concretionary horizon, overlain by medium bedded massive horizon, concretionary at top, medium grey weathers pale brown with tan staining, occasional rootlets	
	570.25 - 572.55	2.30	1.68	2.0	Siltstone	bottom 10 cm very carbonaceous and shaley, medium massive bedded horizons interbedded with blocky fractured horizons, top has abundant rootlets and is slightly carbonaceous, rootlets make it look like a paleosoil, has a shaley carbonaceous layer 35 cm from top	
	572.55 - 573.5	.95	.70	.65	Coal	bottom 20 cm are mostly carbonaceous mudstone, coal is weathered wet and powdery, dull with lustrous surfaces, upper 10 cm is carbonaceous mudstone, at top-iron stained muddy-clayey layer (thin)-not volcanic	
165°	573.5 - 574.4	.9	.66	.60	Siltstone	grades from carbonaceous mudstone at top of last unit to siltstone massive at center, blocky fracture at top and bottoms, blocky to shaley at top, grades to mudstone at top, medium grey, weathers pale brown	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Location Co-ordinates	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION: Main	LITHOLOGIC DESCRIPTION: Amplified	Sample Number
	574.4 - 576.8	2.4	1.37	1.3	Siltstone/ Carbonaceous Mudstone at Base	shaley and coaly at base 15 cm thick, grades up to siltstone, siltstone is medium bedded, interlayers of shaley mudstone, medium grey, weathers pale brown, grades to blocky mudstone for top 30 cm, 113/045°	
	576.8 - 577.4	.60	.34	.35	Siltstone	some massive medium beds, the rest is blocky fracture, grades into mudstone at top, siltstone is dark grey weathers brown, 5 cm thick carbonaceous mudstone at base has streaky orange staining, gradational at top contact	
	577.4- 579.5	1.8	1.03	1.0	Mudstone	blocky fracture, basal 40 cm are medium dark grey, medium grey weathering, above this it is concretionary, tan weathered color, fresh surface is medium grey	
	579.5 - 582.5	2.0	1.14		Covered		
	582.5 - 585.6	3.1	1.52	1.10	Siltstone	medium bedded, laminated, olive grey 2.14, weathers pale brown, 303/055°, 311/052°, occasional rootlets, rare plant material, hard top is obscured, base is gradational	
	585.6 - 592.5	7.5	3.7		Mudstone	top 80 cm is medium grey, blocky fracture, concretionary, tan weathered color, underlain by 1 meter of medium dark grey, weathers medium grey, still has blocky fracture, thin carbonaceous horizon at 588.35° (1.80 cm from top true thickness), medium grey, block, 75cm thick, some tan staining, medium bedded, well bedded, silty in middle, rare carbonaceous plant material, bottom 30 cm is slightly carbonaceous and more fractured 305/057°	
	592.50 - 592.70	.20	.10	.12	Coal	varies in thickness, 6-16 cm thick on either side of trench, wet, dull, powdery	
	592.70 - 595.40	2.70	1.33		Mudstone	medium grey tan weathering, thinly bedded, shaley fracture transition to silt in middle, sandy below grading into mudstone at base, occasional orange stained plant material rare carbonaceous material, sharp lower contact	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Location Co-ordinates	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION: Main	LITHOLOGIC DESCRIPTION: Amplified	Sample Number
	595.40 - 597.20	1.80	.88	.75	Coal	weathered, powdered, dull, minor bright bands, bottom 1/2	
	597.20 - 600.3	3.1	1.52		Mudstone	dirty shaley and cabonaceous top 10 cm, medium grey slightly brown-grey weathering, occasional silty bed, thin bedded, rare carbonaceous laminae 297/053°	
	600.3 - 600.40	.10	.05	.08	Coal	wet, powdered, muddy coal	
	600.4 - 602.20	1.80	.88		Mudstone	as above and one thin silty interbed near bottom	
	602.20 - 602.50	.30	.18	.20	Coaly/ Mudstone	weathered	
	602.5 -		1.7		Siltstone/ Mudstone	interbedded, siltstone finely laminated and cross laminated, tan weathering, thinly bedded, blocky fracture, rare plant material, mudstone medium grey, non carbonaceous, splintery fracture, occasional thin shaley carbonaceous interbed, both contacts gradational, middle unit mostly siltstone	
	605.90	3.40					
	605.90 - 608.20	2.30	1.13		Coal	very dirty, very weathered, grades downwards into carbonaceous mudstone	
	608.20 - 609.00	.8	.40		Siltstone	muddy in interbeds places, medium grey, some fracture surfaces are orange stained, top covered by overburden	
	609.50 End of Trench						
176°	609.5 - 654.5				Overburden		
185°	654.5 - 776.5				Overburden		
178°	776.5 - 780.0	3.5			Mudstone	exposed in bottom of trench, mostly covered, no true thickness nor orientation, hard, greyish black, carbonaceous, iron stained, slickensided surface, coaly	
	780.0 - 783.3	3.3			Mudstone	as above, but is now quite silty	
	783.3 - 802.0	18.7			Siltstone	medium dark grey, weathers buff to light grey, thinly bedded, iron stained, highy broken, 146/028° (roughly), few carbonaceous laminations, few concretions, few very fine grained sandy laminations, much of this outcrop is obscured with overburden, but trend follows roughly along	

ESSO RESOURCES CANADA
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TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Location Co-ordinates			
	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION: Main	LITHOLOGIC DESCRIPTION: Amplified	Sample Number
						trench, so pick up some bed near end of O.C., muddy in places, few rootlets, very sandy at top, 136/035° (better)	
	802.0 - 804.0	2.0	.15		Mudstone	dark grey, very coaly and carbonaceous, 5 cm weathered coal band at top	
	804.0 - 808.0	4.0			Sandstone	very fine grained, light grey, weathered light brown, deeply weathered and iron stained, hard	
178°	808.0 - 824.0	16.0			Overburden		
	824.0 - 825.0	1.0	0.15+		Coal	bright, wet, weathered, couldn't find bottom-trench full of water	
	825.0 - 828.0	3.0	.5		Siltstone	muddy, thinly bedded, highly broken, iron stained, muddy	
173°	828.0 - 849.0	21.0			Overburden		
	849.0 - 855.0	6.0			Sandstone	fine grained, medium grey, iron stained, weathers tan, numerous mica flecks, faintly laminated, medium bedded, cross laminated	
	855.0 - 860.0	10.0			Overburden		
	860.0 - 863.5	3.5			Sandstone	as above, sandstone has now become medium to coarse grained, salt and pepper with orange specks	
	863.5 - 1053.0				Overburden		
	1053.0 - 1055.7	2.7m	.30+		Sandstone	medium light grey, salt and pepper with orange specks, weathers tan, exposed in bottom of trench	
178°	1055.7 - 1081.0	25.3	2.8		Sandstone	as above, not well exposed in trench	
	1081.0 - 1081.8	.8	.25		Coal	top is obscured, bright, good cleat	
			1.0		Siltstone	medium light grey, weathers buff, carbonaceous plant remains, muddy, some very thin coaly mudstone interbeds 228/008	
	1081.8 - 1094.2	12.4	.35+		Coal	bright at top 10 cm to mudstone split 10 cm to bright with dull and powdery at bottom, bottom obscured in bottom of trench	

ESSO RESOURCES CANADA
COAL DIVISION

TRENCH LITHOLOGY LOG

Project	Falling Creek
Map Area	C2

TRENCH NO.	3	
DATE	BEGIN	Aug 29/81
	END	Sept 6/81

Location Co-ordinates	BEGIN	mE 60260	mN 44865
	END	mE 60415	mN 44660

Azimuth (°)	Distance Along Trench	Apparent Thickness	Calculated True Thickness	Measured True Thickness	LITHOLOGIC DESCRIPTION Main	LITHOLOGIC DESCRIPTION Amplified	Sample Number
178°	1094.2 - 1098.3	4.1		.30	Sandstone	dark grey, very fine grained, carbonaceous, weathers pale brown in some places, carbonaceous and orange plant fragments	
	1098.3 - 1099.4	1.1		.35	Mudstone	very carbonaceous and coaly, shaley in places	
	1099.4 - 1101.1	1.7		.5	Sandstone	very fine grained, silty laminations, medium grey on fresh surface, weathers tan to pale brown, numerous carbonaceous plant fragments, silty at bottom	
	1101.1 - 1106.5	5.4		.5	Mudstone	coaly and carbonaceous	
	1106.5 - 1114.1	7.6		1.0	Sandstone	very fine grained, light grey, weathers very light grey, faintly laminated, thinly bedded, a few carbonaceous laminations, carbonaceous plant fragments, rootlets	
	1114.1 - 1122.5	8.4		1.0	Mudstone	coaly at top, very carbonaceous throughout, friable, very thinly bedded	
	1122.5 - 1123.0	0.5		.25	Siltstone	weathers yellow brown, numerous rootlets, thinly bedded	
	1123.0 - 1125.8	2.8		.25	Mudstone	as above, very coaly	
	1125.8 - 1133.8	8.0		.80	Siltstone	as before, concretionary at top, becomes muddy at base	
	1133.8 - 1136.0			.60	Sandstone	light grey, very fine grained, weathers tan, finely laminated, abundant rootlets, plant fragments, muddy interbeds	
	1136.0 - 1137.5	1.5		.60	Mudstone	carbonaceous, numerous orange and carbonaceous plant fragments, coaly 10 cm thick siltstone band in center, very thinly bedded	
	1137.5 - 1147.3	9.8		.25	Mudstone	coaly and carbonaceous	
	1147.3 - 1148.6	1.3		.4+	Mudstone	carbonaceous, as before (0.6m)	
	1148.6 - 1166.0	17.4			Overburden		
	End of Trench						

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

Project	Falling Creek
Location	C-2

Begin	Sept. 1/81	
End	Sept. 7/81	

Core Examiner(s)	B.M.Wright
S.D. Carr	J. Horgan

Hole No.	81-1

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Hole Particulars

Location	59410 mE 44010 mN		
Elevation	1220 m	Hole Bearing	
Total Depth	282.55 m	Hole Angle	90°

Coal Coring Performance

Core Diameter	HQ
Core Recovered	274.1
Length Cored	282.55
Core Recovery	97%

Logging

Logged By	BPB- Neil Harvey
CCS	
Neutron Neutron	
Dip Meter	

Examination Date	Sept. 8/81 - Sept. 12/81

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
1		2.11	2.49	.38	.30	3.05	Mudstone	very rubbly, with some silty laminations, ball and pillow structures, possible dewatering structures, medium grey in color, calcareous, ground core	
1		2.49	3.03	.54	.43		Mudstone	as above, one sheared surface with coaly material and calcite, iron-stained calcareous surfaces, carbonaceous partings in middle	
1	53°	3.03	3.49	.46	.37		Sandstone/ Siltstone	interlaminated, occasional mudstone interlaminae, worm burrows, ball and pillow structures, jointing is almost parallel with core axis, cross-laminations, right way up, broken core at base, calcareous, sandstone light grey, siltstones are medium grey.	
1		3.49	3.57	.08	.06		Lost Core		
1		3.57	4.41	.84	.67	5.18	Sandstone/ Siltstone	as above.	
1-2		4.41	4.75	.34	.27		Sandstone/ Siltstone	as above.	
2		4.75	6.11	1.36	1.09		Mudstone	medium grey, carbonaceous laminations and partings, calcite-filled fractures parallel to bedding (1/3 of the way from the bottom) orange-stained plant fragments, orange-stained joint surfaces, faintly laminated, carbonaceous siltstone at base (0.0/m), very broken at base.	

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Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
2		6.11	6.46	.35	.28	7.01	Lost Core		
2		6.46	6.54	.08	.06		Mudstone	carbonaceous, very hard, orange-stained fracture surfaces, calcite on bedding surfaces, carbonaceous partings, very thin bright coaly partings, highly broken.	
2		6.54	6.63	.09	.07		Lost Core		
2-3		6.63	7.68	1.05	.84	8.23	Mudstone	medium grey, laminated, calcite filled fracture parallel to bedding at top, top 20 cm is carbonaceous, orange-stained bedding surfaces, carbonaceous partings.	
3		7.68	8.72	1.04	.83		Mudstone	medium grey, slightly silty, laminated, calcite filled fracture parallel to bedding, becoming more carbonaceous and coaly at base, bright coal lenses at base, calcite coated joint surfaces, iron-stained fractures.	
3		8.72	9.10	.38	.30	5.27	Coal/Mudstone	mostly dull with a few bright bands, hard, sheared surfaces, broken at top, some yellow staining, mudstone is carbonaceous, iron-staining on fracture surfaces, slickensides.	
3		9.10	9.45	.35	.28		Coal	0 - 0.05 (from top) m: bright with dull conchoidal fracture 0.05 - 0.08: mudstone, carbonaceous 0.08 - 0.17: coal, powdery, bright with dull 0.17 - 0.29: mudstone, medium grey, carbonaceous, very broken 0.29 - 0.35: coal, chunks of mudstone in powdered coal, broken and rubbly	
3	51°	9.45	9.64	.19	.15		Mudstone	medium grey, faintly laminated, very calcareous, very thin calcite filled fractures, occasional carbonaceous laminae.	
3		9.64	9.66	.02	.02	10.67	Coal	dull with bright, powdered.	
3-4		9.66	9.96	.30	.23		Mudstone	dark grey, polished and sheared surface 0.55 m from top, this area is also a rubbly zone, carbonaceous partings, thin (1mm) bright coal bands throughout, calcite-filled micro-fractures parallel to bedding, calcareous, most is good stick-core, becomes increasingly carbonaceous towards base, fracture surfaces are polished.	
4		9.96	10.23	.27	.21		Lost Core		
4		10.23	11.05	.82	.64		Mudstone	as above	
4		11.05	11.29	.14	.11		Coal	dull with bright bands, very muddy at top and bottom, hard, bright bands 1/2 mm to 0.5 cm thick.	
4		11.29	11.40	.11	.09		Lost Core		

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
4		11.40	11.48	.08	.06		Mudstone	coaly, pulverized and broken.	
4		11.48	12.23	.75	.58	13.41	Mudstone	medium grey, calcite-filled micro-fractures, polished carbonaceous surfaces, laminated, rare plant fragments, orange-stained fracture, good stick core.	
		12.23	12.32	.09	.07		Lost Core		
4		12.32	12.50	.18	.14		Mudstone	as above, broken at top.	
4	56°	12.50	13.44	.94	.78	14.01	Siltstone	medium grey, good stick core, faintly laminated, occasional coaly flecks, homogeneous, rare carbonaceous plant fragments, hard, not calcareous.	
4-5		13.44	14.10	.66	.55		Siltstone	grades to mudstone at base, as above, calcareous.	
5		14.10	15.80	1.7	1.41		Sandstone	with mudstone and siltstone laminae, cross-laminated, burrowed throughout, soft sediment deformation, muddier at bottom, calcareous, vertical calcite filled joints, medium light grey, mudstone is medium grey, sandstone:mudstone = 70:30, sandstone is very fine grained.	
5-6	60°	15.80	16.44	.64	.55	17.07	Mudstone	good stick core, medium dark grey, faintly laminated, hard, very few plant fragments, conchoidal fracture, very calcareous.	
6		16.44	16.78	.34	.30		Mudstone	as above, top half is calcareous.	
6		16.78	16.89	.11	.10		Mudstone	carbonaceous, polished, coaly partings, broken and ground, dark grey.	
6		16.89	17.02	.13	.11		Lost Core		
6		17.02	17.19	.17	.15		Mudstone	silty at base, carbonaceous, coaly plant material, medium dark grey, calcareous.	
6		17.19	17.24	.05	.04		Lost Core		
6		17.24	18.30	1.06	.92		Sandstone	with mudstone laminations, mudstone is medium grey, sandstone is light grey, muddier at top, churned at base to soft sediment deformation, ball and pillow structures, burrows especially at base, calcite filled fractures bedding, perpendicular to bioturbated in middle, rare bright thin coaly band near top, sandstone - very fine grained, sharp bottom contact, gradational top contact.	
6-7		18.30	19.81	1.51	1.14	20.12	Mudstone	top .30 m is very carbonaceous with thin bright coal bands (also quite broken), thin 5 cm carbonaceous horizons found in top two-thirds of unit, these carbonaceous horizons have thin bright coal bands and are shaley, well developed laminations in bottom half of unit, faint laminations in top half, carbonaceous laminations, a few calcite filled micro fractures parallel to bedding, laminations are distorted probably due to soft sediment deformation, good stick core.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
7	49°	19.81	20.76	.95	.72		Mudstone	a few very fine grained sandstone laminations at top, siltstone laminations, carbonaceous partings, calcite lining joints, calcareous (more so in some places), calcite filled fractures parallel to bedding, some thin discontinuous bright coal lenses, good stick core, some soft sediment deformation at top, medium grey.	
7		20.76	20.86	.10	.08		Mudstone	very carbonaceous, coaly with bright thin discontinuous coal lenses, polished surfaces, greyish-black, very broken.	
7		20.86	21.59	.73	.55		Lost Core		
7-8		21.59	22.10	.51	.38		Mudstone	medium grey, carbonaceous partings, becomes silty at base, clean joints perpendicular to bedding, non-calcareous.	
		22.10	22.39	.29	.22		Siltstone	medium grey, calcareous, calcite filled fractures, calcite lined joint surfaces.	
8		22.39	22.50	.11	.08	23.47	Siltstone	slightly muddy, bright coaly partings, calcite lining joint planes, broken at base.	
8-9		22.50	24.65	2.15	1.62		Siltstone	muddy, good stick core, carbonaceous partings, calcareous, medium grey, calcite filled fractures, at bottom - iron-stained calcareous lined joints, faint laminations, more calcite veining and more carbonaceous partings at top, polished carbonaceous joint lining, pyrite flakes on joint.	
9		24.65	25.20	.55	.42		Siltstone	with some very fine grained sandy laminations, ball and pillow structure, carbonaceous partings, calcite filled micro fractures, good stick core, sandstone/siltstone ratio = 40:60.	
9		25.20	25.46	.26	.20	26.52	Siltstone	calcite filled fractures, medium grey, slightly muddy, iron-stained calcite lined joints, worm burrows.	
9		25.46	26.16	.70	.53		Siltstone	as above, calcareous.	
9		26.16	26.69	.53	.40		Siltstone	with sandstone inter-laminations, as before burrows, bioturbated, cross-lamations ball and pillow structure.	
9		26.69	27.08	.39	.29		Mudstone	silty at top, some carbonaceous and coaly partings, medium dark grey, thin bright discontinuous coal lenses at base, slightly calcareous.	
10		27.08	27.80	.72	.60		Lost Core		
10		27.80	27.90	.10	.08		Coal	bright with dull bands, powdery and broken.	
10		27.90	28.19	.29	.24		Lost Core		

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
10		28.19	28.34	.15	.12	28.9	Mudstone/Coal	pyrite, very broken.	
10		28.34	28.62	.28	.23		Mudstone/Coal	as above, core not as broken, some .5 cm thick, bright bands.	
10		28.62	29.20	.58	.48		Mudstone	medium dark grey, carbonaceous partings, bright, some stringers and bands, calcite filled fractures, becomes coaly at base.	
10		29.20	29.44	.24	.20		Lost Core		
10		29.44	29.60	.16	.13		Coal	dull with bright bands, sheared, muddy at bottom.	
		29.60	29.75	.15	.12		Lost Core		
10		29.75	29.92	.17	.14		Mudstone	calcite filled fractures parallel bedding, some coaly bands near top, carbonaceous.	
10	57°	29.92	31.02	1.1	.92		Mudstone	with very fine grained sandstone laminations, soft sediment deformation features, cross-laminations, some calcite filled fractures, some thin coaly partings.	
10-11		31.02	31.10	.08	.07		Mudstone	carbonaceous and coaly, some calcite filled veins at top.	
11		31.10	31.56	.46	.39	32.00	Coal	hard, dull with lustrous surfaces, sheared.	
11		31.56	31.63	.07	.06		Coal	bright with dull bands, powdered.	
11		31.63	31.77	.14	.12		Lost Core		
11		31.77	32.51	.74	.62		Mudstone	very fine grained sandstone laminations, thin bright discontinuous coal bands near top, finely disseminated pyrite within sandstone laminations, calcite filled fractures, calcareous, numerous rootlets, a few carbonaceous plant remains.	
11		32.51	33.31	.80	.67		Coaly Mudstone	very coaly, broken, rubbly near top, coal is bright and crisp, calcite filled fractures.	
11-12		33.31	34.25	.94	.79		Siltstone	very fine grained sandstone laminations, numerous calcite filled fractures, bioturbated, abundant rootlets, joint perpendicular to bedding, calcareous, sandstone-light grey, siltstone-medium light grey, a few carbonaceous partings, cross-laminated.	
12		34.25	34.94	.69	.51	35.26	Mudstone	numerous thin discontinuous, bright coal lenses, abundant calcite filled fractures, polished carbonaceous joint surfaces, calcite joint surfaces.	
12		34.94	35.71	.77	.57		Mudstone	as above, fewer coaly lenses, silty at base, calcareous.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
12-13	48°	35.71	37.31	1.6	1.19		Sandstone	with siltstone interlaminations - rootlets, soft sediment deformation, calcite lined joints perpendicular to bedding, calcareous, calcite filled fractures, cross-laminated, sandstone - light grey, siltstone - medium light grey, carbonaceous partings.	
13		37.31	37.41	.10	.07	38.4	Coaly Mudstone	greyish black, bright coal thin bands, somewhat broken.	
		37.41	37.62	.21	.17		Lost Core		
13-14		37.62	38.00	.38	.28		Coaly Mudstone	as above, polished sheared fracture surfaces are abundant, they have calcite on them.	
14		38.00	39.37	1.37	1.0		Siltstone/ Sandstone	with occasional 30 cm mudstone interbeds, calcite filled fractures, sandstone very fine grained, light grey, a few rootlets, calcite lined joints, bright thin discontinuous coal lenses.	
14		39.37	39.87	.50	.37		Mudstone	calcite filled fractures, calcareous, medium dark grey.	
14		39.87	40.34	.47	.35	41.45	Mudstone	coaly especially at base, broken at base, coal is bright and sheared.	
		40.34	40.40	.06	.04		Lost Core		
		40.40	40.63	.23	.17		Mudstone/Coal	rubbly and broken at top.	
14		40.63	41.83	1.2	.89		Lost Core		
14-15		41.83	43.01	1.18	.88		Mudstone	medium dark grey, occasional carbonaceous and coaly partings, calcite filled fractures, calcareous.	
		43.01	43.19	.18	.13		Lost Core		
15		43.19	44.57	1.38	1.02	44.81	Siltstone	very fine grained sandstone laminations, becomes very sandy at base, sandstone light grey, siltstone-medium dark grey, rootlets, worm burrows, calcite and disseminated pyrite flecks lining joint surfaces, a few carbonaceous laminations very calcareous.	
15		44.57	44.65	.08	.06		Siltstone	as above.	
15-16		44.65	46.31	1.66	1.35		Mudstone	greyish black, carbonaceous, silty at base, a few calcite filled fractures, calcareous at base where it becomes silty.	
16		46.31	47.66	1.35	1.10	47.85	Mudstone	silty at top, a few very fine grained sandstone laminations, a few rootlets, calcite filled fracture, very calcareous.	

Box No.	BCA (°)	Depth From	Depth To	App. Thick-ness (m)	True Thick-ness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
16-17		47.66	49.98	2.32	1.90		Mudstone	as above, except it is not silty at top, but does have silty interlaminations, some calcite filled fractures, calcite lined joints, carbonaceous in the middle rootlets, burrows, bioturbated, very calcareous.	
17		49.98	50.74	.76	.62	50.9	Mudstone	pure mudstone, calcite veins, dark grey.	
		50.74	51.14	.4	.33		Lost Core		
17-18		51.14	51.90	.76	.62		Mudstone	as above, top is very carbonaceous, very thin coaly, lenses.	
18		51.90	52.01	.11	.09		Lost Core		
18		52.01	52.14	.13	.11		Coal/Mudstone	hard, sheared surfaces.	
18		52.14	52.37	.23	.19		Coal	bright with dull bands, slightly muddy at top, broken at top.	
18		52.37	52.50	.13	.10		Coal	bright and crisp, sheared.	
18		52.50	52.70	.20	.16	53.95	Siltstone/ Sandstone	muddy at top, calcite veins, laminated, burrows, rootlets, bioturbated, sandstone-light grey, siltstone-medium grey, calcareous.	
18	55°	52.70	53.56	.86	.70		Siltstone/ Sandstone	as above, joint perpendicular to bedding, bright coal lenses near base.	
		53.56	53.90	.34	.28		Lost Core		
18		53.90	54.04	.14	.11		Coal	bright, hard, dull bands, calcite filled fractures.	
		54.04	54.40	.36	.30		Lost Core		
18		54.40	54.63	.23	.19		Mudstone	carbonaceous at top, slightly silty at bottom, calcite filled fractures	
19		54.63	54.85	.22	.17		Mudstone/Coal	carbonaceous, sheared, few calcite filled fractures, hard and broken at base.	
		54.85	54.94	.09	.07		Lost Core		
19		54.94	55.28	.34	.26		Mudstone	dark grey, some sheared surfaces, carbonaceous partings, calcite lining joints coaly and broken at top.	
19		55.28	55.90	.62	.47	57.00	Mudstone	medium dark grey, very fine grained sandstone laminations in center, calcite and disseminated pyrite on joint surfaces, calcareous, calcite filled fractures parallel to bedding, a thin bright coal lense at base.	
19-20	50°	55.90	56.72	.82	.63		Mudstone	medium dark grey, calcareous, calcite filled micro fractures parallel to bedding laminated near top, some carbonaceous plant fragments.	
		56.72	56.92	.20	.15		Lost Core		
20		56.92	57.15	.23	.18		Coal	bright and crisp, muddy at base, broken at top.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
20		57.15	57.39	.24	.18		Mudstone	with coaly bands, mudstone is medium dark grey, coal is bright with some polished fracture surfaces.	
20		57.39	58.89	1.5	1.15		Mudstone	has a 10 cm coal band 85 cm from top, coal is bright and sheared, muddy at top and base of coal band, mudstone is medium dark grey, carbonaceous plant fragments, faintly laminated, thin discontinuous coal lenses (particularly at base), bottom 10 cm is coaly and broken, non-calcareous.	
20		58.89	59.36	.47	.36	60.05	Siltstone	non-calcareous, medium light grey, homogeneous.	
20-21		59.36	60.86	1.5	1.15		Siltstone	as above.	
21		60.86	62.18	1.32	1.01		Siltstone	muddy, calcareous, one vertical joint, laminated, flame structures, carbonaceous laminations, occasional carbonaceous plant fragments.	
21		62.18	62.71	.53	.43	63.09	Siltstone	with sandstone lens (irregular shaped), siltstone is medium light grey, sandstone is homogeneous, siltstone is cross-laminated, calcareous, some carbonaceous laminations.	
21-22	55°	62.71	63.78	1.07	.88		Mudstone	silty in places, especially at the base, laminated (particularly at the top), carbonaceous laminations, carbonaceous plant fragments, occasional sheared and polished surfaces, bottom half is calcareous.	
22-23		63.78	65.85	2.07	1.70	66.14	Sandstone	very fine grained, top half is very silty, very light grey, bottom 7/8 is calcareous, calcite filled fractures parallel to bedding, vertical fracture (calcite filled), muddy interlaminations, distinctly laminated, cross-laminations occasional fine grained sandstone interlaminations, some carbonaceous laminations, occasional polished carbonaceous partings.	
23-24		65.85	68.89	3.04	2.49	69.19	Sandstone	as above, with mudstone interbed from 1.4-1.8 m, calcareous, broken at bottom, occasional polished carbonaceous surfaces.	
24		68.89	69.10	.21	.17		Sandstone	transitional zone-interbedded sandstone (as above) with muddy laminations and fine grained sandstone as described before, interbeds are up to 3 cm.	
24-25	56°	69.10	71.99	2.89	2.40	72.24	Sandstone	fine grained, slightly calcareous, biotite flakes, salt and pepper, poorly sorted grains range from very fine grained (upper) to fine grained, (upper) light grey overall color, vague laminations, joints 20° from core axis, hard, good core.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
25-26		71.99	74.97	2.98	2.47	75.29	Sandstone	as above.	
26		74.97	76.74	1.77	1.47		Sandstone	as above, carbonaceous (1 mm) at base.	
26		76.74	77.32	.58	.48		Sandstone/ Mudstone	carbonaceous mudstone - interlaminated sandstone, as above, mudstone-silty and very carbonaceous and greyish black, sandstone and mudstone have irregular boundaries, flame structures, mudstone is especially churned, sandstone and mudstone interpenetrative, 30% sandstone/70% carbonaceous mudstone, cross-laminated near top, occasional polished carabonaceous surfaces parallel to bedding.	
26-27		77.32	77.99	.67	.56	78.33	Sandstone/ Mudstone	carbonaceous mudstone - as above, except approximately 75% sandstone/25% mudstone. well laminated and cross-laminated, not as disturbed, calcite filled veins perpendicular to bedding, polished carbonaceous surface parallel bedding at base	
27		77.99	79.42	1.43	1.19		Sandstone	very fine to fine grained, dirty, light grey, thin discontinuous coal lenses (especially in top 15 cm), abundant carbonaceous laminations, cross-laminations calcite vein parallel to bedding near base, bottom .15 m contains crispy coal lenses.	
27-28		79.42	80.99	1.57	1.18	81.38	Sandstone/ Mudstone	top 1/2 meter mostly mudstone and is quite churned with flame structures, ball and pillow, carbonaceous plant material in the mudstone (silty), thin coal bands and carbonaceous laminae 0.70 m from top, bottom 80 cm is 80% sand and 20% mud, bottom 70 cm contains vague laminations and abundant small mud clasts and pinch and swell structures and occasional thin coal lenses (especially near the bottom), sandstone is light grey, mudstone is medium grey, calcareous, very hard.	
28		80.99	81.25	.26	.20		Sandstone/ Mudstone	as above, mud clasts, coaly stringers, carbonaceous bedding surfaces.	
28	49°	81.25	82.31	1.06	.80		Mudstone	medium dark grey, coaly wisps, carbonaceous plant fragments, some bright coal clasts, has sandstone laminations from 0.35 - 0.62, laminated at base, calcite filled veins, calcareous, sandy laminations are cross-laminations.	
		82.31	82.53	.22	.17		Lost Core		
28		82.53	83.40	.87	.66		Mudstone	carbonaceous, greyish black, broken at top, highly polished carbonaceous fracture surfaces throughout, very coaly.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
29		83.40	83.73	.33	.25		Coal	dull with bright sheared surfaces, muddy at top and bottom, broken.	
		83.73	83.80	.07	.05		Lost Core		
29		83.80	84.04	.24	.18	84.43	Carbonaceous Mudstone	greyish black, coaly lenses, abundant carbonaceous plant fragments.	
		84.04	84.16	.12	.09		Carbonaceous Mudstone	as above, ground at top.	
29		84.16	84.90	.74	.56		Sandstone	very fine grained, light grey, calcite crystals on joint planes, laminated and cross-laminated, grades upwards to a medium grey mudstone, carbonaceous plant fragments and coaly lenses in the mudstone.	
29		84.90	85.51	.61	.46		Mudstone	top half is silty, carbonaceous, abundant plant fragments, medium grey, well developed laminations, sheared carbonaceous fracture surfaces at base.	
29		85.51	85.61	.10	.08		Mudstone/Coal	mudstone is greyish black, coal is bright (up to 1 cm thick).	
29		85.61	85.87	.26	.20		Mudstone	coal lenses and carbonaceous laminae, greyish black, polished fracture surfaces.	
29-30		85.87	86.74	.87	.66		Sandstone	very fine grained, light grey, top and bottom are gradational, bottom 20 cm has mudstone laminations and worm burrows, very churned and disturbed laminations in the middle, grades upwards to siltstone in the top 20 cm, mud clasts at 0.41 from bottom.	
30		86.74	87.15	.41	.31	87.48	Mudstone	medium grey, sandy laminations at top, slightly calcareous, faintly laminated.	
30-31		87.15	90.29	3.14	2.37	90.53	Mudstone	0-50 cm: medium dark grey, laminated 50 cm-1.5 m: silty, laminated 1.5-1.9 m: grades to a mudstone here again, at 1.7 get bright coal bands, mudstone is carbonaceous, with very thin coal interlaminations 1.9 m-2.9: carbonaceous mudstone with numerous plant fragments, some coaly interlaminations 2.9-3.14: becomes slightly silty and non-carbonaceous.	
31-32		90.29	92.92	2.63	1.98		Mudstone	greyish black, carbonaceous and coaly in places, non-calcareous, polished carbonaceous surfaces, becomes silty at base.	
32		92.92	93.21	.29	.23	93.57	Silty Mudstone	sandy interbed in middle (sandstone is light grey, very fine grained, very churned) carbonaceous partings.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
		93.21	94.11	.90	.70		Lost Core		
32		94.11	94.84	.73	.57		Silty Mudstone	medium grey, a few faint silty laminations.	
32-33		94.84	96.09	1.25	.97		Sandstone	fine grained, light grey, a few silty laminations, silty at bottom and at top rootlets, carbonaceous partings throughout, laminations are churned up in middle calcareous.	
33		96.09	96.30	.21	.16		Mudstone	silty at top, large joint perpendicular to bedding, pyrite and calcite on joint surface, elongated pyrite nodule in middle (1 cm thick).	
33		96.30	96.33	.03	.02	96.62	Carbonaceous Mudstone	sheared, broken, calcite lined fractures parallel to bedding, thin bright coaly stringers, calcite on fracture surfaces and some disseminated pyrite on fracture surfaces.	
33		96.33	96.54	.21	.17		Carbonaceous Mudstone	as above.	
33		96.54	97.10	.56	.45		Siltstone	muddy at top, sandy at bottom, medium grey, non-calcareous.	
33-34	54°	97.10	98.01	.91	.63		Sandstone	very fine grained, light grey, medium grey siltstone laminations, becomes less sandy and more muddy at base, cross-laminated, calcite lined vertical joint, calcite filled fracture parallel to bedding, also carbonaceous material on joint surfaces.	
34		98.01	99.35	1.34	1.08	99.67	Mudstone	carbonaceous and coaly, coal lenses and stringers at 40 cm - 55 cm from top - very fine grained sandstone laminations, rootlets, carbonaceous partings, numerous calcite filled veins parallel to bedding, medium dark grey, some polished surfaces on fractures, non-calcareous.	
34		99.35	100.05	.70	.57		Carbonaceous Mudstone	very coaly especially in bottom half, up to 3 cm thick coal bands, very shiny and polished carbonaceous partings throughout, disseminated pyrite flecks on partings, abundant calcite filled fractures.	
34		100.05	100.25	.20	.16		Coal	dull lustrous, hard, bright bands throughout, muddy at bottom	
34		100.25	100.45	.20	.16		Coal	bright with dull lustrous bands, sheared, broken.	
34		100.45	100.62	.17	.13		Coal	muddy, dull with bright bands, polished fracture surfaces, and calcite flecks on fracture surfaces.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
35		100.62	101.25	.63	.57		Mudstone	dark grey, bright coal lenses, carbonaceous, coaly plant fragments, abundant at top, calcite lining fractures, polished fracture surfaces, becomes silty at base.	
35-36		101.25	102.29	1.04	.94	102.72	Siltstone	very fine grained sandstone laminations, calcareous, medium light grey, hard, very good core, a few very thin calcite veins.	
36	65°	102.29	105.3	3.01	2.72	105.77	Siltstone	medium grey with very fine grained light grey sandstone laminations thoughout at 1.00 m - 1.22 m sandstone band with carbonaceous partings, cross-laminated calcite lining joint planes, bioturbated, coaly stringers and lenses are abundant in bottom third, polished joint surfaces, sandstone at bottom grades upward into siltstone, calcareous.	
36		105.3	105.76	.46	.42		Siltstone/ Sandstone	sandstone-upper fine, lower medium, numerous coaly stringers, carbonaceous laminae, calcite lined fracture surfaces, calcareous, sandstone is light grey siltstone is dark grey.	
36-37		105.76	107.12	1.36	1.23		Sandstone	upper medium with some coarse grains, grades down to fine grained, salt and pepper, carbonaceous partings, coaly stringers at top, polished fracture surfaces, calcite lined vertical joints with disseminated pyrite, calcite filled fractures, laminated rootlets, calcareous.	
37		107.12	108.22	.12	1.09	108.81	Siltstone	medium grey with very fine grained light grey sandstone laminations, cross-laminated, calcite filled fractures, rootlets, some carbonaceous plant remains a few coaly blebs, siltstone: sandstone = 80 : 20.	
37-38		108.22	109.93	1.71	1.55		Siltstone	as above, very bioturbated at the bottom with fine (upper) grained 8 cm sandstone band at base	
		109.93	110.25	.32	.29		Lost Core		
38		110.25	110.85	.60	.54		Coal	dull, sheared, highly polished at top 15 cm, .15 m - .21 m : bright with dull, powdered, .21 m - .44 m, dull lustrous and powdered, .44 m - .60 m bright dull, sheared.	#1
		110.85	110.95	.10	.08		Lost Core		
38-39		110.95	114.19	3.24	2.55		Mudstone/ Sandstone/ Siltstone	numerous rootlets, coaly stringers throughout, becoming sandier at base, sandstone very fine grained, light grey, siltstone: medium grey, mudstone: dark grey, sandy units are calcareous, muddier at top, laminated, cross-laminated.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
						111.87		(66 cm from top of unit) calcite filled fractures, calcite lining joint planes pyrite on joint planes.	
39		114.19	114.67	.48	.38	114.91	Sandstone	very fine grained, silty laminations, burrows, calcite filled fracture, rootlets calcareous, light grey.	
39-40		114.67	115.09	.42	.33		Sandstone	silty, as above with near vertical calcite and pyrite coated joint.	
40	52°	115.09	115.68	.59	.46		Mudstone	dark grey, carbonaceous, carbonaceous plant fragments, bright coaly stringers silty at the base.	
40		115.68	117.67	1.99	1.57	117.96	Sandstone/ Siltstone	top half is very fine grained sandstone with siltstone laminations, bottom mostly siltstone with sandy laminations and muddy 20 cm thick interbeds, carbonaceous partings and a few coaly stringers.	
		117.67	117.92	.25	.20		Lost Core		
41		117.92	118.93	1.0	.80		Sandstone	silty, very fine grained, light grey, silty at base.	
41		118.93	120.15	1.22	.96	121.01	Mudstone	silty at the top, calcite filled fractures, carbonaceous partings throughout, dark grey.	
42-43		120.15	123.17	3.02	2.38	124.06	Mudstone	dark grey, carbonaceous, smooth carbonaceous partings, coaly stringers, calcite lining joints.	
43		123.17	124.37	1.20	.95		Mudstone	as above, silty at base.	
43		124.37	125.35	.98	.87		Sandstone/ Mudstone	silty, sandstone: light grey, very fine grained, silty, mudstone: dark grey, carbonaceous, big carbonaceous and coaly plant fragment at bottom, non-calcareous calcite filled fractures.	
43-44		125.35	126.09	.74	.65	127.1	Siltstone	sandy, fine grained, numerous calcite filled fractures, iron-stained fracture surfaces, ball and pillow structures, rootlets, faintly laminated slightly calcareous, iron-stained, vertical joint, medium dark grey.	
44	62°	126.09	127.39	1.30	1.15		Siltstone	sandy, as above, sandy horizons, slightly calcareous, faintly bioturbated, mottled, three fractures near perpendicular to bedding.	
44-45		127.39	129.12	1.73	1.53		Sandstone	very fine grained, silty laminations, silty towards base, calcite lined fracture surfaces, fractures are at a high angle to bedding, medium light grey, some carbonaceous laminations seen on broken surfaces, fracture sub-parallel to bedding, three near vertical fractures, gradational at bottom.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
		129.12	130.09	.97	.86	130.15	Siltstone	sandy, contorted laminations, laminations, flame structures, some carbonaceous material on lamination surfaces, sandier in bottom 40 cm where there is also a horizon of rip-up clasts, 2 calcite filled fractures sub-parallel to bedding, 2 fractures near perpendicular to bedding, sandy horizons are medium light grey silty horizons are medium grey.	
		130.09	131.49	1.40	1.24		Siltstone	as above, sandy.	
45-46		131.49	133.02	1.53	1.35	133.2	Carbonaceous Mudstone	very coaly for top 5 cm, coaly stringers throughout top 1.3 m, bottom .23 is silty, calcite filled fractures sub-parallel to bedding, slickensided, discontinuous 3 cm thick wavy silty beds found occasionally, at 1.53 m the core is very fractured, broken, slickensided and polished surfaces, coaly plant fragments, greyish black.	
46		133.02	133.29	.27	.24		Carbonaceous Mudstone	as above	
46-47	62°	133.29	135.9	2.61	2.30	136.25	Siltstone	sandy laminations, becomes less well laminated in the bottom half, medium grey no fracture, non-calcareous.	
47-48		135.9	138.8	2.90	2.56	139.3	Siltstone	sandy, homogenous, faintly laminated, before 1.4 m it is very bioturbated, laminations more distinct towards the base, 3 fractures almost perpendicular to bedding, calcite vugs at 2.60 m from top, burrows.	
48-49		138.8	141.44	2.64	2.33	142.3	Siltstone	sandy, well laminated, top .5 m has flame structures, cross-laminated, coaly material on laminated surface at 1.3 m fracturing, approximately vertical with calcite lining, fracture surface, hard, slightly calcareous, some slickensiding parallel to bedding at 1.3 m.	
49		141.44	142.64	1.20	1.06		Siltstone	sandy, as above, gradational bottom contact.	
49-50		142.64	145.18	2.54	2.24	145.39	Sandstone	fine (upper) coarsens downwards to medium (lower) has pebbly horizons (up to 6 cm x 2.5 cm chert, some mud clasts polished fragments, average size 1 cm x 2 cm, well rounded, long axis parallel to bedding) slightly calcareous, mica, faintly laminated throughout, high angle, fractures, (four), calcite lined fractures can have coaly laminations, broken about 1 m above marker block, salt and pepper, light grey.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
50-51		145.18	147.64	2.46	2.21		Sandstone	as above, fracture surfaces are also siliceous, sharp lower boundary.	
51		147.64	148.03	.38	.39	148.44	Siltstone	muddy, poorly laminated (ie irregular laminations), slightly carbonaceous, coaly partings, dark grey, gradational lower contact.	
51-52	64°	148.03	150.83	2.80	2.52		Siltstone	sandy, fines downwards, 2 pairs of high angle fractures, 2 low angle sub-parallel bedding fractures, fractures are lined with calcite, rootlets, laminated and bioturbated especially in middle portion, burrows, sharp lower contact, calcareous.	
52		150.83	151.73	.90	.81	151.4	Mudstone	slightly silty in places, slightly carbonaceous coaly plant material, dark grey slightly calcareous, not laminated, coaly stringers.	
52		151.73	152.01	.28	.25		Mudstone	as above, gradational lower boundary.	
52-53		152.01	152.65	.64	.58		Siltstone	laminated, rootlets, abundant plant remains, carbonaceous in the bottom 5 cm with a coaly parting, medium dark grey, calcareous, boundaries (top and bottom) are transitional.	
53		152.65	154.1	1.45	1.30		Siltstone	sandy, poorly laminated, contorted laminations, calcite on high angle shear surfaces (six), varies from sandy siltstone to a muddy siltstone, top and bottom boundaries are gradational, has some coaly plant remains.	
		154.1	154.3	.20	.18		Mudstone	silty, carbonaceous, faintly laminated, medium dark grey.	
53		154.3	154.4	.10	.09	154.54	Coal	sheared, dull lustrous with bright partings, few fusain bands, grades into a carbonaceous mudstone below.	
53		154.4	154.52	.12	.11		Coal	as above	
53		154.52	154.80	.28	.25		Lost Core	(coal)	
53		154.80	155.04	.24	.22		Mudstone	carbonaceous, 3 cm coal parting at 15 cm, dark grey	
53-54		155.04	155.58	.54	.47	156.01	Siltstone	sandy, with contorted laminations, rootlets, medium grey, boundaries are both gradational.	
54	60°	155.58	155.98	.40	.35		Siltstone	laminated, 2 high angle fractures, also has calcite veining sub-parallel to bedding, fines downwards, becomes slightly carbonaceous at base, fractures filled with calcite, slightly calcareous, coaly plant fragments, both boundaries are gradational.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
54		155.98	156.51	.53	.46		Mudstone	carbonaceous, coal parting (2 cm thick) at 14 cm, calcite veining on high angle shear plane, calcite crystals formed on the wide fracture, may be minor faulting abundant carbonaceous plant debris, much less carbonaceous in bottom half, dark grey, boundaries are transitional.	
54-55		156.51	158.45	1.94	1.53		Siltstone	unhomogeneous, muddy siltstone at top, poorly laminated, grades downwards to a sandier and more well laminated portion, this grades down to muddy and well laminated siltstone in the lower third, very carbonaceous at the base, calcite plant remains, medium grey in color, base is a sharp contact.	
55		158.45	158.47	.02	.02		Coal	dull lustrous, bright bands.	
55		158.47	158.65	.18	.14	159.11	Mudstone	carbonaceous, with coaly stringers, abundant plant remains, high angle calcite filled vuggy fracture, possible fault zone.	
55		158.65	158.95	.30	.21		Mudstone	as above, gradational base.	
55		158.95	159.35	.40	.28		Siltstone	muddy and laminated, abundant rootlets, carbonaceous horizons, carbonaceous in bottom 7 cm, has one slickensided fracture surface parallel to bedding, gradational lower boundary.	
55-56	45°	159.35	161.24	1.89	1.34		Sandstone	silty, fine grained, coarsens downwards, one high angle calcite-filled fracture well laminated, occasional rootlets, some coaly plant remains, some of the laminated partings are very micaceous, lower boundary is sharp and very slightly erosional.	
56		161.24	161.55	.31	.22	162.16	Mudstone	silty, large coaly plant clasts, one slickensided surface sub-parallel to bedding, slightly carbonaceous throughout, medium dark grey, faintly laminated in the top half, sharp basal contact.	
56		161.55	163.30	1.75	1.24		Sandstone	fine grained, coarsens downwards to medium grained, well laminated in the top half, faintly laminated below, rootlets present in the top half, basal, 15 cm has abundant coaly plant remains, some polished surfaces, calcite veining sub-parallel to bedding, one calcite fracture parallel to bedding, bottom contact is sharp and slightly erosional, medium light grey.	
56		163.30	163.42	.12	.09	163.68	Mudstone	carbonaceous, with some slightly silty laminations.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
56		163.42	163.71	.29	.23		Mudstone	as above.	
57		163.71	165.54	1.83	1.44		Siltstone	sandy, has sandy laminae, carbonaceous and coaly plant remains, abundant rootlets (especially in the top half), coaly stringers on laminated surfaces, carbonaceous horizon 25 cm above the base, upper contact is gradational, lower contact is distinct, carbonaceous towards the base, medium dark grey.	
57	52°	165.54	166.41	.87	.69	166.73	Mudstone	carbonaceous, silty in the central third, faintly laminated, calcite veining parallel to bedding, coaly plant remains on bedding surface, slickensides on bedding surfaces, dark grey, concretionary.	
57-58		166.41	167.19	.78	.61		Mudstone	as above.	
58		167.19	168.32	1.13	.89		Siltstone	top is gradational, top half is muddy siltstone, grades into a poorly laminated sandy siltstone, basal contact is sharp, contains coaly plant material, medium dark grey.	
58		168.32	169.08	.76	.60		Siltstone/ Mudstone	top 1/3 is a slightly carbonaceous and silty mudstone, calcite veining parallel to bedding, grades downwards to a sandy siltstone in bottom 2/3, faintly laminated, calcareous.	
58-59		169.08	169.96	.78	.61	169.48	Siltstone	muddy, sharp top boundary.	
59		169.96	170.54	.68	.54		Siltstone	as above, faintly laminated, becomes very carbonaceous at the base, has some calcite veining parallel to bedding, medium dark grey, occasional coaly plant material, basal boundary is gradational.	
59		170.50	170.74	.24	.20		Lost Core	(coal).	
		170.74	172.34	1.60	1.26		Coal	top 14 cm is very sheared, mostly dull lustrous, below this is good stick core to 30 cm from base, all clean coal, few bright bands giving clarain horizons, in dull lustrous.	
		172.34	172.61	.22	.17		Lost Core	Carbonaceous mudstone.	#2
		172.61	172.86	.25	.20		Coal	very dirty coal with some carbonaceous mudstone, sheared and fractured	
		172.86	173.38	.52	.41		Lost Core	mudstone/siltstone.	
59		173.38	173.48	.10	.08		Siltstone	slightly carbonaceous, muddy, coaly stringers on the top with calcite veining on sheared surfaces, abundant coaly plant material, medium dark grey.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
60	52°	173.48	175.13	1.65	1.30		Siltstone/ Sandstone	siltstone laminations, 33 cm mudstone/siltstone band 68 cm from top, some joints sub-parallel to bedding, calcite and quartz lined, mica in laminations and fracture surfaces, carbonaceous plant fragments, calcite filled vugs and calcite veins parallel to bedding, carbonaceous partings, cross-laminated, flame structure, ball and pillow structure, medium light grey, sandy portions are slightly calcareous mud clasts.	
60-61		175.13	175.71	.58	.46	175.87	Carbonaceous Mudstone	with thin (1 cm) bright coal bands and coal stringers, greyish black, becomes less carbonaceous in bottom, a few calcite filled fractures sub-parallel to bedding, numerous carbonaceous plant fragments.	
61		175.71	176.04	.33	.24		Siltstone	muddy, medium light grey, disturbed and churned, a few rootlets, non-calcareous some carbonaceous partings.	
61		176.04	176.86	.82	.65		Carbonaceous Mudstone	muddy, very carbonaceous, a few thin bright coal bands, 2 cm thick sheared coal bands, top 15 cm is very coaly and sheared with carbonaceous layers, bright coal bands, a few calcite filled fractures sub-parallel to bedding, concretionary Fe nodule, greyish black.	
61		176.86	177.77	.91	.72		Siltstone	very fine grained sandy interlaminations, medium light grey, numerous rootlets, becomes muddy towards base, calcite filled fracture is almost vertical, numerous carbonaceous plant fragments.	
61		177.77	177.90	.13	.10		Mudstone	carbonaceous, bright coal bands at the top, calcite filled fractures sub-parallel to bedding, polished bedding surfaces, greyish black.	
61		177.90	178.07	.17	.16		Coal	dull lustrous, sheared, a few bright bands, hard, good core.	
61-62		178.07	178.32	.25	.23		Carbonaceous Mudstone	same as interval 176.04m - 176.86m.	
62		178.32	178.4	.08	.07		Coal	dull with bright bands, powdered, sheared.	
62		178.4	178.61	.21	.19	178.92	Mudstone	dark grey, coaly and carbonaceous at top, slightly silty in places.	
62		178.61	179.17	.56	.52		Mudstone	as above, polished fracture surfaces, carbonaceous partings, calcite filled fractures, becomes silty towards the base, abundant carbonaceous plant fragments.	
62	68°	179.17	180.40	1.23	1.14		Siltstone/ Sandstone	with muddy interbeds at base, light grey to medium light grey laminated, cross-laminated, rootlets, ball and pillow structures, burrows, bioturbated, calcite crystals infill vug.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
62-63		180.40	181.45	1.05	.97		Mudstone	greyish black, silty at top, carbonaceous at base, sheared, abundant calcite filled fractures sub-parallel to bedding, near vertical calcite filled joints, core is ground (ie in core band) broken and coaly in middle.	
		181.45	181.95	.5	.46		Lost Core	in middle of mudstone unit.	
63-64		181.95	182.12	.17	.16	181.97	Siltstone	muddy, medium grey, mottled.	
64		182.12	185.09	2.97	2.75	185.02	Siltstone	as above, muddy, a few very fine grained sandy laminations, bright coal stringers abundant in bottom quarter, medium grey, sandstone laminations are light grey, ball and pillow structures, calcareous vertical joints.	
64-65		185.09	185.45	.36	.33		Siltstone	medium light grey, mottled, faintly laminated, becomes sandy at base, very slightly calcareous.	
65		185.45	186.98	1.53	1.17		Sandstone	fine to very fine grained, laminated, mud clast, rootlets, calcite filled fractures sub-parallel to bedding, near vertical joints, mica flecks on fracture surfaces, at base, coarser grained sandstone lenses and interbeds are churned with fine grained sandstone interlaminations, calcareous (gradational).	
65-66		186.98	188.22	1.24	.95	188.16	Sandstone	medium grained, salt and pepper, abundant bright coaly stringers, calcareous, faint laminations, occasional carbonaceous laminations, rootlets.	
		188.22	188.5	.28	.21		Lost Core		
66-67		188.5	191.31	2.81	1.39	191.11	Sandstone	as above, broken near top, a few carbonaceous plant fragments, laminations.	
67		191.31	194.39	3.08	2.36	194.16	Sandstone	as above, one dark grey 3 cm long chert pebble in bottom third, laminations, lots of near vertical joints.	
67-68		194.39	197.33	2.94	2.25	197.21	Sandstone	as above, abundant calcite filled near vertical joints, broken in middle, at 2 m from top - abundant, bright coaly stringers and carbonaceous laminations, 1 cm thick band of mud clasts, very polished carbonaceous surfaces	
68-69	50°	197.33	199.70	2.37	1.82		Sandstone	as above, basal contact is very sharp, numerous vertical joints, coaly stringers near base, carbonaceous partings.	
69		199.70	199.85	.15	.11		Coal	powdery, muddy, a few bright bands, very bright and hard at top.	
69		199.85	200.20	.35	.27	200.26	Mudstone	slightly silty, dark grey, coaly stringers at top, carbonaceous throughout, plant fragments, polished fracture surfaces, a few coaly partings, calcite on fracture surfaces.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
69	50°	200.20	200.83	.63	.48		Mudstone	carbonaceous, polished carbonaceous fracture surfaces, dark grey, a few carbonaceous plant fragments, mica flecks.	
69	63°	200.83	200.93	.10	.09		Coal/Mudstone	coaly, dull lustrous with bright bands, sheared.	
69-70		200.93	202.0	1.07	.95		Siltstone	muddy at top, very fine grained, sandstone laminations, sandier at base, cross-laminations, rootlets, light grey to medium light grey, calcareous in sandy portions.	
70		202.0	203.48	1.48	1.32	203.3	Sandstone	fine (upper) grained, a few siltstone and mudstone laminations in top half only sandstone coarsens to medium grained at base, carbonaceous laminae, mica flecks fracture surfaces are carbonaceous rootlets, flame structures, cross-laminated, a few calcite filled fractures.	
70	63°	203.48	203.56	.08	.07		Sandstone	as above.	
70-71		203.56	204.35	.79	.70		Mudstone	silty, laminations, cross-laminations, medium dark grey becoming carbonaceous towards the base, vertical calcite lined joints.	
71		204.35	204.94	.59	.53		Mudstone	carbonaceous, greyish black, a few siltstone laminations, a few bright coaly bands at base, polished carbonaceous surfaces calcite filled fractures and veins at base.	
71		204.94	206.44	1.5	1.26	206.35	Siltstone	muddy in center and at base, a few fine to medium grained sandstone bands, some disturbed sediments with ball and pillow structures, flame structures, coaly partings at base, a few calcite filled fractures sub-parallel to bedding.	
71		206.44	206.49	.05	.04		Siltstone	as above.	
71-72	57°	206.49	207.34	.85	.71		Sandstone	fine grained, laminated, cross laminated, very silty at base, occasional thin (1 cm) mudstone bands, sandstone is salt and pepper, siltstone - medium grey, mica.	
72		207.34	208.4	.70	.59		Siltstone	grading down into mudstone-medium grey, muddy at base, calcite filled joint almost perpendicular to bedding, faintly laminated, calcareous, a few rootlets.	
		208.4	209.23	1.19	1.00		Mudstone	very carbonaceous in places, silty at base, dark grey bright coal bands and stringers at 75-85 cm from top, calcite filled fractures, sub-parallel to bedding.	
72		209.23	209.52	.29	.24	209.40	Siltstone	mudstone laminations, medium grey, no calcite filled fractures, no carbonaceous partings, calcareous.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
72-73		209.52	210.28	.76	.64		Siltstone	laminated, cross-laminated, a few churned up sandstone laminations in bottom 20 cm, medium grey, a few carbonaceous laminations at base.	
73		210.28	211.38	1.1	.92		Mudstone	carbonaceous at top and bottom, silty in middle, thin sheared 1 cm thick coal band at top and 22 cm from bottom, dark grey, calcite filled fractures sub-parallel to bedding.	
73		211.38	211.48	.10	.08		Coal	top 1/2 is bright and crisp, bottom is dull and hard with bright bands.	
73		211.48	211.80	.32	.27		Mudstone	becoming silty at base, carbonaceous and coaly partings and stringers, calcite filled fractures sub-parallel to bedding, dark grey.	
73		211.80	212.40	.6	.50	212.45	Siltstone	with very fine grained sandstone laminations, abundant rootlets, medium light grey, sandy portions are calcareous.	
73-74	58°	212.40	215.45	3.05	2.59	215.50	Siltstone	grades to silty sandstone at bottom 1/2, a few fine grained sandstone laminations occasional 10 cm thick mudstone bands, burrows, bioturbated, ball and pillow structures, highly disturbed, calcareous throughout, medium light grey, sandy at bottom.	
74-75		215.45	218.44	2.99	2.54	218.54	Sandstone/ Siltstone	as above, cross-laminated, churned sediment, rip-up mud clasts, mudstone interbeds are carbonaceous.	
75		218.44	218.62	.18	.15		Sandstone/ Siltstone	as above.	
75-76		218.62	221.39	2.77	2.35	221.59	Sandstone	pebble horizons at 0.17 m - 0.56 m, 0.94 m - 1.87 m, 2.4 m - base, sandstone fines upwards, well laminated and silty at top (20 cm), carbonaceous laminae in top half, salt and pepper, lower medium grained, calcareous, pebbles from 2 mm-3 cm in diameter, some chert pebbles, subrounded, sand.	
76-77		221.39	222.23	.84	.71		Sandstone	as above.	
77		222.23	223.10	.87	.74		Sandstone	with silty and muddy interlaminae, medium grey, well laminated near top, varies in grain size from fine to coarse, are two cycles of grain size : 15 cm coarse band at 10 cm from bottom, coal stringers near bottom, polished carbonaceous surfaces near bottom, calcareous, siliceous vertical joints, cross-laminated in the finer grained material, muddy laminations are at the top and also have flame and ball and pillow structures.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
77		223.10	223.33	.23	.20		Mudstone	carbonaceous, broken at top and bottom, greyish black, abundant carbonaceous plant fragments, thin calcite veins parallel to bedding.	
77		223.33	224.49	1.16	.98	224.64	Mudstone	medium grey, non-calcareous, rare carbonaceous plant fragments, medium light grey siltstone interbed from .64 m to .94 m, mottled with one sandy interlamination.	
77-78		224.49	224.73	.24	.20		Mudstone	as above, broken at top.	
78	58°	224.73	227.07	2.34	1.98		Siltstone	sandy, with sandstone interbeds, fines upwards, medium light grey, laminated and cross-laminated, sandstone interbeds are up to medium grained, unit is a transition from siltstone above to sandstone below.	
78-79		227.07	227.57	.5	.42	227.64	Sandstone	salt and pepper, as before, pebble horizon near bottom, large mud clast and calcite filled tension fractures near top, fine to medium grained	
79-80		227.57	230.55	2.98	2.53	230.76	Sandstone	as above, well laminated, pebble horizons at .3 m, .8 m, 1.9 m, 2.3 m, medium grained with silty interlaminations (occasionally), broken at bottom.	
80-81		230.55	233.44	2.89	2.45	233.76	Sandstone	as above, pebble horizon at 1.1 m, thin bright coal stringers between 2.2m and 2.4 m from the top, coal stringers between 20-30 cm from bottom.	
81		233.44	234.06	.62	.53		Sandstone	as above, rubbly, polished carbonaceous surfaces near top, thick calcite veins and calcite filled fractures, middle is very broken and pebbly, sharp lower contact.	
81-82		234.06	236.54	2.48	2.10	236.83	Mudstone	medium dark grey, 0.0 m - .15 m : very carbonaceous with coaly interlaminations 0.15 m - 1.06 m : homogeneous, mudstone 1.06 m - 1.09 m : coal band, bright and crisp 1.09 m - 1.17 m : carbonaceous mudstone with coaly lenses 1.17 m - 1.36 m : homogeneous, mudstone 1.36 m - 1.83 m : silty mudstone - mottled and churned 1.83 m - end : slightly carbonaceous calcite lined joints, polished surfaces.	
82-83	58°	236.54	239.69	3.15	2.67	239.88	Mudstone	0 - .3 m : carbonaceous, carbonaceous plant fragments, near vertical calcite lined joint, also one that is sub-parallel to bedding 0.3 - 0.73 m : homogeneous .73 m - .90 m : siltstone	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
								.90 m - 2.6 m : mudstone, very broken in middle, calcite fractures, some sheared and polished surfaces 2.6 m - end : siltstone, mottled and burrowed, calcareous.	
83-84		239.69	242.26	2.57	2.18		Mudstone/ Siltstone	interbedded, coarsening downwards to a very fine grain, silty sandstone, calcareous, bottom 60 cm is sandstone, interlaminations and ripples, one mudstone interlamination, the rest is siltstone and mudstone (20 cm beds), rip-up clasts, bioturbation.	
84		242.26	242.79	.53	.45	242.93	Siltstone	muddy at top, burrows, bioturbated, laminated, medium light grey, calcareous.	
84-85		242.79	245.87	3.08	2.61	245.98	Siltstone	with muddy laminations, .22 m - .58 m (from top) is well cross-bedded, 1.08 m - 1.4 m is very muddy and bioturbated, 1.4 m - 1.83m is bioturbated and silty at bottom, 1.83 m - 2.26 m is nicely cross-bedded, occasional rootlets near bottom, entire unit is calcareous.	
85-86		245.87	248.87	3.00	2.43	249.02	Siltstone	as above, with muddy interbeds, bioturbated throughout, broken at base, thin coal band at 23 cm from bottom, bottom 23 cm is carbonaceous mudstone contains calcite veins sub-parallel to bedding, just above this is 0.4 m of rippled siltstone, near vertical jointing throughout.	
86	54°	248.87	249.26	.39	.32		Siltstone	as above, gradational lower contact, very muddy, dark grey.	
				.20	.16		Lost Core		
86		249.26	249.76	.30	.24		Mudstone/Coal	sheared, greyish black, bright coal bands from 2 mm - 1.5 cm, very broken.	
86-87		249.76	250.98	1.22	.99		Mudstone	very carbonaceous, coaly interlaminations, lenses, coaly plant fragments, polished surfaces, especially near top.	
87		250.98	251.86	.88	.71	252.07	Mudstone	medium grey, top 66 cm is slightly carbonacous, slightly mottled, non-calcareous homogeneous.	
87-88		251.86	254.91	3.05	2.47	255.12	Mudstone	as above, silty interbeds in bottom 60 cm, occasional coaly stringers, some horizons have carbonaceous plant material.	
88-89		254.91	257.29	2.38	2.21		Mudstone	as above, numerous .5 cm thick bright coal lenses near top, slightly silty faint laminations, some siltstone interbeds in bottom 1 meter, coal lenses and stringers in bottom 1 m also.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
89		257.29	258.0	.71	.66	258.17	Siltstone	bottom 1/2 is sandy, top half is muddy, non-calcareous, bottom half is mottled, medium grey.	
89		258.0	258.26	.26	.24		Siltstone	as above.	
89-90	68°	258.26	261.07	2.81	2.61	261.22	Mudstone	0.41 - .43 m from top : carbonaceous 0.65 - .82 m : silty 1.22 - 1.99 m : silty interbeds and laminations, ball and pillow structures, mudstone is dark grey, occasional plant fragments, slightly carbonaceous in places.	
90		261.07	261.73	.64	.59		Mudstone	as above.	
91		261.73	262.42	.69	.64		Siltstone	grades to sandstone at base, medium grey, hard, non-calcareous, homogeneous (no structures), clean.	
91	68°	262.42	264.25	1.83	1.70	264.26	Conglomerate	gradational at top, very light grey, pebbles range from granule-size to 3 cm, sub-angular to subrounded, grades back and forth from matrix supported to pebble supported coaly stringers throughout, slightly calcareous, chert pebbles.	
91-92		264.25	266.99	2.74	2.54		Conglomerate	as above, calcite lining fractures, pebble near top that is 7 cm in diameter, near horizontal slickenside surface near top; generally the whole conglomerate grades upwards (ie pebbles are smaller at top of unit).	#3
92		266.99	267.06	.07	.06	267.31	Sandstone	salt and pepper, calcite filled fractures parallel to bedding, non-calcareous, fine grained.	
92-93		267.06	268.51	1.45	1.20		Sandstone	as above, laminated, bottom 3/4 is calcareous, carbonaceous laminae at base, very broken at top, ground core at top, near vertical joints, fines upward, medium grained at base, sharp lower contact.	
93-94	56°	268.51	270.16	1.65	1.37	270.3	Siltstone	sandy near top, muddy interbeds and interlaminations, disturbed laminations, carbonaceous laminations, polished surfaces, occasional coaly plant fragments, muddy at bottom.	
94		270.16	270.28	.12	.10		Siltstone	as above.	
94		270.28	271.24	.96	.80		Sandstone	very fine grained, silty laminations, cross-laminated, carbonaceous laminations burrows, bioturbated, calcite filled fractures perpendicular to bedding, carbonaceous plant remains on bedding surfaces, becoming siltier at base, light grey.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
94		271.24	271.59	.35	.29		Mudstone	carbonaceous, greyish black, polished surfaces, calcite veining parallel to bedding, top 10 cm is churned up with overlying sediments, flame structures, friable coaly stringers.	
94		271.59	271.91	.32	.27		Siltstone/ Sandstone	churned together, bioturbated, a few carbonaceous lenses, flame structures, highly deformed, soft sediment deformation, medium grey.	
94		271.91	272.15	.24	.20		Sandstone	medium grained, salt and pepper, mudstone interbeds (.5 cm thick), mudstone is carbonaceous with polished surfaces, occasionally carbonaceous fragments, calcite veining sub-parallel to bedding.	
94-95		272.15	273.14	.99	.89	273.41	Siltstone/ Sandstone	with occasional carbonaceous mudstone interbeds less than 5 cm thick, medium light grey, laminated, rootlets, burrows, bright coaly stringers, calcite filled fractures sub-parallel to bedding, deformed laminations throughout most of unit bioturbated.	
95		273.14	273.37	.23	.21		Siltstone/ Sandstone	as above.	
95	65°	273.37	273.82	.45	.41		Mudstone	carbonaceous, dark grey, calcite filled fractures, sub-parallel to bedding	
95		273.82	274.62	.80	.73		Sandstone	light grey, fine medium grained, salt and pepper, siltstone laminations, a few carbonaceous laminae calcite filled fractures parallel to bedding, abundant rip-up clasts in bottom 5 cm, cross-laminated sharp lower contact, abundant rootlets.	
95		274.62	275.82	1.2	1.08		Mudstone	top 20 cm is silty, calcite filled "tension" fractures and vugs, rootlets are abundant at top as are carbonaceous plant fragments, burrows, carbonaceous except for top 20 cm, polished surfaces, coaly stringers	
95-96		275.82	275.92	.10	.09	276.16	Mudstone	silty, slightly carbonaceous, medium dark grey	
		275.92	276.07	.15	.14		Mudstone	silty, as above.	
		276.07	276.67	.60	.54		Siltstone	sandy, carbonaceous stringers, medium light grey, disturbed laminations, carbonaceous plant fragments, occasional carbonaceous mudstone 1 cm thick interbeds at base.	
96		276.67	277.07	.40	.36		Carbonaceous Mudstone	dark grey, with 5 cm thick, very fine grained sandstone interbed in middle, ball and pillow structures, disturbed laminations, carbonaceous laminae in sandstone.	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
96		277.07	277.74	.67	.61		Sandstone	very fine grained, light grey, occasional mudstone laminations 5 cm thick mudstone interbed in center, very disturbed and churned, carbonaceous rootlets, flame structures, slickensided calcite lined fractures parallel to bedding.	
96-97		277.74	278.90	1.16	1.05	279.51	Siltstone	muddy, occasional sandstone interbeds especially at base, carbonaceous plant remains, coaly stringers, burrows, highly disturbed bedding.	
97-98		278.90	281.99	2.99	2.7	282.55	Mudstone/ Sandstone/ Siltstone	mudstone- dark grey, siltstone is medium grey, sandstone is light grey, laminated and cross laminated, burrows, bioturbation, flame structures, calcite filled fractures sub-parallel to bedding, "tension" fractures oblique to bedding, occasional carbonaceous laminae, rootlets, coaly partings, joints perpendicular to bedding, core is broken at top.	
				Total True Thickness	225.26 m			Lost Core 8.46 m (3%).	

END OF HOLE

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

Project	Falling Creek
Location	S3

	Begin	Sept 10/81
	End	Sept 15/81

Core Examiner(s)	B. Wright
L. Klatzel-Mudry	S. Carr
J. Horgan	

Hole No.	81-2

Hole Particulars

Location	60605 mE		
	42122 mN		
Elevation	1185 m		
Total Depth	340.46	Hole Bearing	
		Hole Angle	90°

Coal Coring Performance

Core Diameter	HQ
Core Recovered	302.44 m
Length Cored	331.63 m
Core Recovery	91.2 %

Logging B.P.B

Logged By	Neil Harvey
	CCS
	Neutron Neutron

Examination Date	Sept 16/81
	Sept 20/81

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
1		5.96	6.02	.06	.05		Sandstone	light grey, fine grained, non-calcareous, orange-stained matrix, ground and broken, possibly till	
1		6.02	6.09	.07	.05		Coal	dull with bright bands, occasional polished surfaces, lustrous surfaces, heavily broken with some carbonaceous mudstone pieces	
1		6.09	6.20	.11	.09		Lost Core	coal	
1		6.20	6.23	.03	.02		Mudstone	carbonaceous, bright coaly bands, polished shear surfaces, greyish black	
1		6.23	6.32	.09	.07		Tuff	buff, very soft, extremely fine, pearly lustre	
1		6.32	6.88	.56	.40		Lost Core	dirty coal	
1		6.88	6.98	.10	.08		Coal	dull, lustrous surfaces, powdered in spots, thin ash interlaminations and small lenses, occasionally dull lustrous	
1		6.98	7.04	.06	.05		Coal	hard, dull lustrous with thin bright bands	
1		7.04	7.12	.08	.06		Lost Core	coal	
1		7.12	7.28	.16	.12		Lost Core	dirty coal	
1		7.28	7.85	.57	.41		Lost Core	coal - probably dull with bright bands	
1		7.85	8.95	1.10	.80		Lost Core	dirty coal	
1		8.95	9.38	.20	.16		Coaly Mudstone	greyish black, carbonaceous with coal lenses, dull lustrous, with occasional bright bands, hard, some polished surfaces, broken and rubbly	

Box No.	bCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
1		9.38	9.46	.31	.23	11.28	Coal	dull banded with some dull lustrous	3
1		9.46	9.8	.34	.26	11.58	Coal	as above	
1		9.8	10.3	.50	.38		Coal	top .04m is dull as above, .04m - .20m soft powdered dull and bright, .20m - .50m is hard dull and bright	
1		10.3	12.4	2.1	1.6		Mudstone	medium grained, very broken, calcite filled fractures, occasional coal lenses, some orange staining on fractures, 1cm thick carbonaceous horizon in middle	
2		12.4	13.67	1.27	.96	14.33	Mudstone	medium grained, slightly broken, top 15cm is silty, homogenous, non-calcareous	
2		13.67	14.13	.46	.35		Mudstone	grades to siltstone at base occasional sandy interlaminations near base, faint laminations, no plant fragments, staining on fractures, calcite veinlet	
2/3	49°	14.13	15.41	1.28	.97		Muddy Siltstone	with sandstone interlaminations, medium grained, sandstone is light grey and very fine grained, contorted laminations, well developed at bottom	
3	53°	15.41	16.69	1.28	1.02	17.37	Sandy Siltstone	grades to sandstone at base, light grey, well laminated, carbonaceous laminae, contorted laminae at top, some cross-laminations	
3/4		16.69	18.62	1.93	1.54		Sandstone	top 1m is very broken, generally laminated, carbonaceous laminations, some coal lenses, fine grained, orange specks in matrix, dirty, medium light grey, orange stain, near vertical fractures, some cross-laminations, top .24m has coal clasts and mud clasts, dirty (scour and fill) .63 - .90 scour and fill, bottom 10cm is scour and fill	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
		18.62	19.22	.60	.50		Lost Core		
4		19.22	19.78	.56	.38		Siltstone	with muddy interbeds contorted laminations, mud clasts, medium light grey slightly calcareous	
4	43°	19.78	20.13	.35	.23	20.42	Sandstone	with silty interbeds, siltier at top, one calcite filled vertical fracture, top half has contorted laminations, sand is very fine grained	
4/5		20.13	21.60	1.47	1.00		Sandstone	as above, except it coarsens downwards to medium grained at base, carbonaceous laminae, very broken at base, mud clasts, scour and fill near base, dirty sandstone, muddy matrix, calcite veining at base-possibly fault breccia	
5		21.60	21.73	.13	.09		Lost Core		
5		21.73	23.05	1.32	.92	23.47	Muddy Siltstone	heavy calcite veining, brecciated from 0.37 and 1.1 to 1.3, brecciated veinlets are generally sub parallel to bedding, muddy at top and in middle, faint laminations, polished surfaces, medium grey	
5/6	44°	23.05	26.09	3.04	2.1	26.52	Sandstone	coarsens downward (ie. fines upward), top .90 very silty and muddy, at .6 from top, calcite veins and vugs at .9 to bottom, fine to medium grained, medium grey, abundant carbonaceous laminations, distinct laminations, occasional muddy interbeds, abundant calcite fill fractures both near vertical and oblique to bedding, bottom is broken, polished surfaces near bottom	
6/7		26.09	27.67	1.58	1.10		Sandstone	as above, scour and fill, carbonaceous, mudstone clasts, coal lenses and stringers, calcite veins, contorted laminae, sharp lower contact with mudstone at base	
7		27.67	28.84	1.17	.81	29.57	Mudstone	monotonous, dark grey, calcareous at top, carbonaceous with coal stringers in middle irregular fracture broken at bottom	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
7/8		28.84	31.76	2.92	2.03	32.61	Mudstone	as above, occasionally carbonaceous with coal stringers, some polished surfaces, broken in lower half, not calcareous where it's carbonaceous, slickensides with calcite veining on surfaces, irregular fracture, ground at bottom	
8/9		31.76	32.4	.64	.44	32.92	Mudstone	occasionally carbonaceous with coal stringers, irregular fracture, slickensides	
9		32.4	35.2	2.80	1.95	35.66	Mudstone	occasional coal stringers, carbonaceous in places, bioturbation, concretions broken throughout, heavily broken at base, could have ash band at base, no distinct laminations, therefore no BCA, polished surfaces at base in tuff	
		35.2	38.88	3.68	2.56		Lost Core + Lost Coal		
10		38.88	38.95	.07	.05		Carbonaceous Mudstone	broken, coal stringers, dark grey	
10		38.95	39.03	.08	.06		Coal	highly broken, stuck together with drilling mud, dull lustrous with some well cleated bright bands	
10		39.05	39.08	.05	.03		Carbonaceous Mudstone	as before	
10		39.08	39.12	.04	.03		Coal	dull lustrous, highly broken	
10		39.12	39.38	.26	.18		Carbonaceous Mudstone	highly broken, dark grey, coal stringers, polished surfaces	
10		39.38	40.63	1.25	.87	38.71	Mudstone	occasionally carbonaceous at top, silty in middle, iron concretion, calcite veining near vertical and "tension gashes" oblique to bedding .80 m from top, highly broken and powdered at top	
10		40.63	40.75	.12	.08		Mudstone	carbonaceous, plant fragments, highly broken, pulverized, stuck together with dull mud	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
10/11	(50°)	40.75	41.57	.82	.63	41.45	Silty Mudstone	carbonaceous plant fragments, polished surfaces, bioturbation at top, vertical "tension gash", no distinct laminations therefore no BCA	
11		41.57	42.51	.94	.72		Silty Mudstone	occasionally silty, dark grey, no laminations, no carbonaceous plant fragments, non-calcareous	
11/12		42.51	44.76	2.25	1.72	44.81	Siltstone	occasionally muddy, light grey to medium light grey, carbonaceous plant fragments overbank deposited, possible bioturbation, churned	
12		44.76	45.97	1.21	.93	45.72	Silty Mudstone	medium grey, plant fragments, bioturbation, no lamination	
12		45.97	46.52	.55	.42		Mudstone	medium grey, polished surfaces, plant fragments	
13		46.52	47.72	1.20	.92	47.85	Sandy Siltstone	grades to sandstone at base, medium light grey, broken with abundant vertical calcite veining and minor brecciation at base, minor horizontal "tension gash", possible fault, numerous slickensides at base, not laminated, bioturbated at the top, sandstone at base - very fine grained	
13		47.72	47.9	.18	.14		Sandy Siltstone	as above	
13		47.9	48.25	.35	.27		Mudstone	grades to carbonaceous mudstone, powder and pieces, "fault zone", calcite veining, abundant slickensides and polished surfaces, iron staining on fracture surfaces coal lenses and bands (up to 1cm)	
13/14	55°	48.25	49.25	1.0	.82		Mudstone	dark grey, carbonacous plant fragments, coal stringers, irregular fracture, silty interlaminations at base which are contorted, soft sediment deformation + micro fault	
14	75°	49.25	49.89	.64	.62		Coal	dull lustrous, hard, with bright bands	
14		49.89	49.93	.04	.04		Coal	dull and bright, hard	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
14		49.93	50.0	.07	.07		Coal	dull lustrous, hard	
14		50.0	50.08	.08	.08		Tuff	bands in coal seam	4
14		50.08	50.14	.06	.06	50.9	Coal	dull and bright, bright bands up to 1cm thick	
15	(63°)	50.14	53.1	2.96	2.64	53.95	Mudstone	silty in middle, top 10cm is carbonaceous and dark grey, medium dark grey mudstone, ironstone concretion, slickensides, carbonaceous plant fragments	
15		53.1	55.21	2.11	1.88		Mudstone	as above, irregular fracture, horizontal calcite vein at base	
16		55.21	55.97	.76	.68	57.0	Siltstone	faintly laminated, rare mudclasts, faint bioturbation, occasional sandy lense, slickensides	
16/17		55.97	57.95	2.98	2.66		Siltstone	as above, occasional muddy interbeds	
17	60°	57.95	59.05	1.1	.95	60.05	Silty Sandstone	medium light grey, very fine grained, faintly laminated, calcite filled "tension" fractures, occasional calcite veining parallel to bedding, slickensides on bedding planes, pyrite on bedding planes, occasional argillaceous and silty interlamination, calcareous	
17/18	70° 63°	59.05	61.87	2.82	2.56	63.09	Sandstone	orange iron staining on fracture, bioturbation, medium light grey, well laminated, fine to very fine grained, silty laminae, ball and pillow structures, iron staining of matrix, calcite veins parallel to bedding, calcareous, very broken at .25 - .50cm with iron stained surfaces and slickensides and polished surfaces, muddy interlaminations at base, bioturbation in muddy interlaminae	
		61.87	63.86	1.99	1.77		Lost Core	in above unit between .25 - .50cm from top	
18		63.86	64.42	.56	.50		Sandstone	as above	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
19		64.42	66.2	1.78	1.59	66.14	Sandstone	medium light grey, very coarse grained to granule size (ie. up to .5mm in diameter), sub-rounded chert pebbles, numerous coal stringers and lenses, poorly laminated, highly broken in places, typical "scour and fill channel lag" deposit, broken from .52m - 1.2m, sharp lower contact - erosional contact	
19		66.2	67.38	1.18	1.05		Siltstone	with sandy lenses, contoured laminations, erosional sand and mud contacts between lenses, slickensides, calcite veinlet in lower 15cm, sub parallel to bedding medium dark grey, lower contact gradational to sandstone	
19/20	65°	67.38	69.22	1.84	1.67	69.19	Sandstone	medium light grey, well laminated, carbonaceous laminations, fine grained truncating cross-beds and cross-laminations - "tops up", mudstone rip up clasts at .67m in thin interval	
20/21	70°	69.22	72.36	3.14	2.95	71.93	Sandstone	light grey - fine becomes medium at base, at .78 carbonaceous laminations are abundant, heavily fractured below 1m with calcite veining and calcite crystals, veining is subparallel and at a high angle, sharp contact	
21/22	82°	72.36	75.34	2.98	2.95	74.98	Mudstone	dark grey, concretions, carbonaceous plant fragments, irregular fracture calcite veining at 1m (3 fractures within 20cm) bioturbations, faint laminations	
22/23		75.34	78.44	3.10	3.07	78.03	Mudstone	as above, carbonaceous plant fragments on laminations	
23/24	77°	78.44	81.42	2.98	2.90	81.08	Mudstone	as above 2.84-2.98m fault breccia, rubble with clast support, occasional coal stringers, horsetail calcite veining, occasionally concretionary, slightly bioturbated, displacement on fault undetermined, mudstone on either side of breccia, no evidence for movement (ie. no slicks or shears)	
25/26		81.42	84.41	2.99	2.91	84.43	Mudstone	dark grey, carbonaceous plant fragments as above	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
26/27	72°	84.41	87.14	2.73	2.60	87.48	Mudstone	carbonaceous mudstone at .70 - 1.20m, silty at base ~ bioturbation and rootlets in silty base	
27		87.14	88.84	1.70	1.81		Sandstone	fine grained, silty at top - laminations well developed, medium light grey, coaly laminations, polished surfaces common, burrows, bioturbation, rootlets, cross-laminations	
27/28	71°	88.84	89.83	.99	.94	90.58	Sandstone	medium to coarse with conglomeratic lenses, poorly sorted, clasts are mainly chert, largest clast size is .6cm, average size .2cm, coal stringers and large plant fragments, upper contact is sharp, stylolites, polished coaly surfaces, fractured and broken core	
28		89.83	91.20	1.37	1.30		Sandstone	as above, cross-bedded	
28	(75°)	91.20	91.55	.35	.34	92.05	Carbonaceous Mudstone	with coal heavily broken, 20% coal powder and pieces	
28/29		91.55	91.67	.12	.16		Carbonaceous Mudstone	as above	
		91.67	92.10	.43	.42		Lost Core		
29		92.10	92.31	.21	.20		Coal	dull lustrous with bright stringers and bands, fusain bands	5A
		92.31	92.44	.13	.13		Lost Core		
		92.44	92.49	.05	.05		Rock Parting	abundant mica and clay minerals, carbonaceous plant fragments, hard	5
29	80°	92.49	92.85	.36	.35		Coal	dull lustrous with bright bands	
29		92.85	92.90	.05	.05		Mudstone	with minute (less than 1mm) crystals or precipitate - amber colour, crystalline	6
29		92.90	93.22	.32	.32		Mudstone	grades to carbonaceous mudstone at base, dark grey, generally very carbonaceous broken at base	
29		93.22	93.26	.04	.04		Concretion	spheroid crystals within mudstone as above, amber colour 1mm size	

Box No.	bCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
29		93.26	94.68	1.42	1.40	95.10	Mudstone	dark grey, grades in and out with carbonaceous mudstone, N.B. mudstone at top and base, broken powder and pieces at base, polished surfaces and slickensides	
29/30	85°	94.68	96.07	1.39	1.38	96.62	Mudstone	carbonaceous at top, dark grey, polished surfaces and slickensides, base silty laminates rootlets and bioturbation, carbonaceous plant remains coal stringers throughout	
30		96.07	96.32	.25	.25		Mudstone	as above	
30	90°	96.32	96.70	.38	.38		Siltstone	sandy, medium grey, poor muddy and carbonaceous laminations, slickensides, bioturbation, very sharp contact at base erosional	
		96.70	96.80	.10	.10		Mudstone	dark grey, carbonaceous, sharp at base	
30	90°	96.80	97.21	.41	.41		Coal	dull lustrous sheared	7
		97.21	97.31	.10	.10		Coal	dull and bright sheared	
		97.31	97.41	.10	.10		Coal	powdered	
		97.41	98.21	.80	.80		Lost Core		
	70°	98.21	98.46	.25	.23		Coal	dull lustrous - dull sheared with/clay pellets in laminations and lenses up to 1 cm thick, very hard	
		98.46	98.63	.17	.15		Coal	dull lustrous, powdered at base, sharp contact with mudstone	
30		98.63	98.70	.07	.06		Lost Core		
30/31		98.70	98.77	.70	.63	99.67	Mudstone	carbonaceous, occasional coal stringer and slickensides, silty at base, poorly laminated at base and bioturbated	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
31/32	65°	98.77	101.47	2.7	2.45	102.72	Mudstone	dark grey, carbonaceous plant fragments, bioturbated, slickensides, rare coal stringer, occasional calcareous stringers, very carbonaceous at base and occasional coal stringers, broken in places	
32/33	(74°)	101.47	104.26	2.79	2.68	105.77	Mudstone	as above with occasional silty interbeds, broken in middle	
		104.26	105.82	1.56	1.49		Lost Core		
33		105.82	106.11	.29	.29		Mudstone	silty, dark grey, slickensided fracture surfaces which are calcite lined and have pyrite specks, mudclasts	
33/34	82°	106.11	107.49	1.38	1.35		Sandstone	fine grained, siltstone laminations, occasional 10cm thick siltstone interbeds, burrows, cross laminations, flame structures, a few clean fractures sub parallel to bedding	
34		107.49	108.24	.75	.74		Siltstone	medium grey, a few laminated sandstone interbeds at the top, pyrite on joint surface, carbonaceous plant fragments, ball and pillow structures	
34		108.24	108.65	.41	.41	108.81	Mudstone	dark grey, clean joint oblique to bedding	
34		108.65	109.8	1.15	1.14		Mudstone	carbonaceous, thin bright coaly stringers and lenses, greyish black, polished joint surfaces, calcite filled fractures, very coaly and broken at base	
34		109.8	109.85	.05	.05		Coal	bright, hard, conchoidal fracture, highly broken	8
34		109.85	110.22	.37	.37		Lost Core	coal, dirty	
34		110.22	110.38	.16	.16		Coal	bright with dull bands, hard, slightly muddy	
		110.38	110.69	.31	.31		Coal	bright, hard, crisp, highly broken, 58% recovery 109.8 - 110.69	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
34/35		110.69	111.0	.39	.39		Mudstone	carbonaceous and coaly, greyish black, silty in middle, very sandy at base	
35	90°	110.0	111.70	.70	.70	111.86	Sandstone	fine grained at top, grades to medium to coarse grained at the base, a few siltstone interbeds @ 20cm from top, carbonaceous laminations throughout, rootlets, ball and pillow structures, coaly bands and stringers especially at base, a few polished joint surfaces subparallel to bedding	
35		111.7	112.7	1.0	1.0		Sandstone	as before, abundant rootlets at base, becomes finer grained at base, bottom 5cm is muddy, broken in middle	9
35		112.7	112.82	.12	.12		Lost Core	sandstone, lost in middle of last unit	
		112.82	112.85	.03	.03		Lost Core	(coal)	
35		112.85	112.93	.08	.08		Coal	dull with bright bands, broken	10
35/36		112.93	113.86	.93	.93		Coal	dull lustrous, with rare bright bands, broken at top, powdery in middle	
		113.86	114.37	.51	.51		Lost Core	coal	
36		114.37	114.60	.23	.23	114.61	Coal	dull, powdered, sheared, occasional bright bands	10
		114.6	114.74	.13	.13		Lost Core	coal 64% rec. 112.80 - 114.73	
36		114.74	115.39	.65	.65		Mudstone	carbonaceous, greyish black, coal stringers, polished surfaces, sheared at base	11
36		115.39	115.50	.11	.11		Lost Core	(mudstone)	
		115.5	115.6	.10	.10		Lost Core	coal	
36		115.6	115.8	.20	.20		Coal	dull with bright bands, very broken and sheared	12
36		115.8	116.03	.23	.23		Lost Core	coal	
36		116.03	116.13	.10	.10		Coal	dull lustrous, a few polished surfaces	
36		116.13	116.33	.20	.20		Coal	dull, powdery, occasional block looks sheared	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
36		116.33	116.43	.10	.10		Lost Core	coal	
36		116.43	116.88	.45	.45		Coal	dull lustrous with bright bands, hard	
36		116.88	117.1	.22	.22		Coal	dull and powdery, occasional bright bands	
36		117.1	117.52	.42	.42		Lost Core	coal, 58% rec. 115.5 - 117.52	
36		117.52	117.73	.21	.21	117.65	Mudstone	carbonaceous and coaly, polished surfaces, highly broken, greyish black	13
37		117.73	119.76	2.03	2.03		Carbonaceous Mudstone	greyish black, coal bands and stringers throughout, polished and slickensided fracture surfaces	
37		119.76	119.94	.18	.18		Lost Core		
37		119.94	120.2	.26	.26		Coal	dirty, hard, muddy, 1cm coal band at base, broken at top	
37		120.2	120.24	.04	.04		Carbonaceous Mudstone	as before	no sample
37	90°	120.24	120.3	.06	.06		Sandstone	muddy	14
37		120.3	120.5	.20	.20		Carbonaceous Mudstone	as before, bright coaly stringers, silty at base	
37/38	(90°)	120.5	120.93	.43	.43	121.01	Siltstone	medium grey, a few very fine grained sandstone laminations, joints perpendicular to bedding, carbonaceous partings	
38	(80°)	120.93	121.23	.30	.29		Siltstone	as above	
38/39	(75°)	121.23	123.79	2.56	2.47		Sandstone	fine grained, with siltstone laminations, carbonaceous partings, bright coal stringers, ball and pillow structures, rootlets, calcite filled fractures subparallel and oblique to bedding, cross laminated, occasional 10cm mudstone interbeds, occasional bright coal stringers and bands	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
39	(72°)	123.79	124.03	.24	.23	124.06	Mudstone	dark grey, slightly silty, carbonaceous, bright coaly stringers, 1 joint perpendicular to bedding	
39/40	72°	124.03	126.81	2.78	2.64	127.1	Mudstone	as above, occasional fine grained salt and pepper sandstone interlaminations, a few 10cm thick siltstone interbeds, ball and pillow structures cross laminations, bright coal lenses and stringers, abundant calcite filled fractures parallel to bedding, carbonaceous stringers, becoming very muddy towards base, polished fracture surfaces	
40	72°	126.81	127.26	.45	.43		Mudstone	as above	
40	72°	127.26	127.51	.25	.24		Lost Core		
40	72°	127.51	127.90	.39	.37		Mudstone	carbonaceous, greyish black, silty at top, broken at top, polished fracture surfaces	
40	72°	127.90	128.27	.37	.35		Coal	dull with bright bands, hard, slightly muddy	
40	72°	128.27	128.44	.17	.16		Coal	dull and powdery with bright thin bands	
40	72°	128.44	128.70	.26	.25	128.93	Lost Coal		
40	(60°)	128.7	128.98	.28	.24		Mudstone	carbonaceous, greyish black, coaly stringers, polished fracture surfaces	
40/41	(55°)	128.98	130.33	1.35	1.1		Mudstone/ Siltstone	interlaminated, siltstone is light grey, mudstone is dark grey and carbonaceous, a few coaly stringers, thick calcite filled fractures, polished and slickensided surfaces, broken at base	
		130.33	130.91	.58	.48		Lost Core		
41	52°	130.91	132.17	1.26	.99	131.98	Sandstone	very fine grained, light grey, laminated, cross laminated, disturbed bedding, soft sediment deformation and micro faults, bright coaly stringers, 10cm carbonaceous mudstone interbed in middle, thick calcite filled fractures sub parallel and oblique to bedding are found throughout unit, carbonaceous plant fragments	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
41	(47°)	132.17	132.34	.17	.12		Sandstone	as above	
41/42	42°	132.34	134.89	2.55	1.71		Mudstone	carbonaceous, slightly silty, occasional fine grained sandstone interbeds 1.5cm thick, ABUNDANT calcite filled fractures sub parallel to bedding, polished and slickensided joint surfaces, carbonaceous stringers, disturbed bedding ?FAULT ZONE? (calcite fractures, slickensides, change in attitude)	
42/43	10°	134.89	135.12	.23	.04	135.03	Mudstone	slightly silty, as above, except bedding is almost vertical	
43	10°	135.12	135.22	.10	.02		Mudstone	as above, calcite fractures	
43/44	66°	135.22	138.12	2.9	2.65	138.08	Mudstone	as above, change in attitude again, occasional bright coal bands, calcite fractures	
44		138.12	138.68	.56	.51		Mudstone	as above, calcite fractures, slightly silty	
44		138.68	139.1	.42	.38		Lost Core	(carbonaceous mudstone)	
44		139.1	139.84	.84	.77		Mudstone	very carbonaceous, dark grey, bright coal interbeds approximately 3cm thick, broken, slickensided and polished fracture surfaces	
44/45		139.84	140.35	.51	.47		Coal	dull lustrous with occasional bright bands, hard, very broken	15 vit.
45		140.35	140.43	.08	.07	140.82	Coal	poudered, dull and bright	
		140.43	140.76	.33	.33		Lost Coal		
45		140.76	141.17	.41	.37		Coal/Mudstone	interbedded coal - bright and dull lustrous, sheared at the base, highly broken at base	
45		141.17	141.79	.51	.57		Lost Core	(carbonaceous mudstone)	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
45		141.79	142.21	.42	.38	142.34	Mudstone	medium dark grey, very carbonaceous at top, bright coaly stringers throughout,	
		142.21	142.65	.44	.40		Core Loss	broken in middle	
45	(61°)	142.65	143.63	.98	.86		Mudstone	as above, rubble zone at .29m from top, abundant fractures subparallel to bedding at base - they are highly polished, also calcite filled fractures subparallel to bedding	
45		143.63	143.99	.36	.31		Mudstone	silty, medium grey, abundant randomly oriented calcite filled fractures, bright stringers, carbonaceous at top and base	
46		143.99	144.72	.73	.64		Mudstone	carbonaceous, dark grey, bright coaly bands 1cm thick, polished fracture surfaces, carbonaceous plant fragments	
46		144.72	144.82	.10	.05	145.09	Coal	dull and powdered	
46		144.82	145.23	.41	.34		Lost Coal		
46		145.23	145.37	.14	.12		Coal	very sheared & polished, dull lustrous with bright bands, hard, muddy @ base	
46	58°	145.37	145.59	.22	.19		Carbonaceous Mudstone	with coaly lenses, greyish black, carbonaceous plant fragments	
		145.59	145.85	.26	.22		Lost Core		
46		145.85	146.9	1.05	.89		Mudstone	silty, coal lenses @ top, coaly from .67 - .72m, sandy lenses @ base, silty in middle, carbonaceous partings, calcite filled fracture subparallel to bedding, slickensided and polished surfaces, mottled and contorted, medium grey	
46/47	(60°)	146.9	147.65	.75	.65		Siltstone	0 - 25cm, sandy interlaminations and lenses, highly contorted, coaly stringers, very dirty, medium dark grey, non-calcareous, 25cm to end, medium grey, irregular fractures, no laminations, some coaly stringers	

Box No.	bCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
47		147.65	148.08	.43	.37	148.13	Mudstone	medium grey, irregular fracture, coal stringers	
47	62°	148.08	149.93	.85	.75		Mudstone	as above, silty in places, faint laminations in bottom half, clean fractures perpendicular to bedding	
47/48	54°	149.93	151.05	2.12	1.72	151.49	Siltstone	with muddy interbeds and occasional sandstone lenses and interlaminations, top half is laminated and cross-laminated, bioturbated, siltstone is light grey, mudstone is medium grey, sandstone is very light grey, calcite vein near parallel to bedding, irregular fracture, bottom half is faintly laminated and bioturbated, bottom 30cm is very dirty	
48	62°	151.05	152.17	1.12	.99		Silty Sandstone	occasional muddy interbeds, top 10cm is silty mudstone, calcareous, laminated and cross-laminated, burrows	
48/49		152.17	154.11	1.94	1.71	154.54	Mudstone/ Siltstone	thick calcite vein subparallel to bedding 30cm from top, top 30cm is slightly sandy and laminated, mudstone is medium grey, siltstone is medium light grey, irregular fracture, bioturbated, calcareous, burrows, faint laminations, unit mostly mudstone	
49	58°	154.11	155.67	1.56	1.32		Siltstone	with muddy interbeds, 50/50 ratio, mudstone is medium dark grey, faintly laminated, bioturbated, siltstone is generally well laminated, 2 thick calcite veins to bedding, pyrite flakes and coal on joint surface that runs parallel to bedding	
50	40°	155.67	156.41	.74	.48		Siltstone	occasional muddy interbeds near top, occasional sandstone interlaminations in middle, light grey, irregular fracture, calcareous	
50	38°	156.41	157.09	.68	.38	157.58	Mudstone	medium grey, calcareous, some silty interlaminations, bioturbated, irregular fracture, thick calcite veins parallel to bedding, extremely broken, slickensided & polished at base, slightly carbonaceous @ base	

Box No.	BGA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
50/51	30°	157.09	158.53	1.44	.72		Siltstone/ Mudstone	0 - .43m: silty, cross-laminated, burrows, thick and abundant calcite veins parallel to bedding @ .25m and .42 - .45, also slickensides; 0.43 - .86m: mudstone, medium grey, occasional contorted siltstone laminations, thin calcite veins throughout; 0.86 - 0.92m: sandstone; 0.92m - end: siltstone with some sandy interlaminations, has 2 near horizontal calcite-filled fractures	
51	32°	158.53	159.85	1.32	.70		Siltstone	light grey, burrows, laminations, sandy laminations and lenses, calcite - filled "tension" fractures, 2 sets of calcite filled fractures (one is parallel to bedding, one is almost horizontal) particularly near base, coaly stringer near base	
		159.85	160.1	.25	.13		Lost Core		
51	(26°)	160.1	160.31	.21	.09	160.63	Mudstone	coaly interlaminations, calcite - filled fractures parallel to bedding, greyish black, calcareous	
51/52	20°	160.31	163.14	2.83	.97		Siltstone	muddy from .96 - 1.55m, laminated, cross-laminated, rootlets, burrows, sandy in top 0.50m, calcite veining parallel to bedding near top, polished and slicked surfaces in mudstone, polished coaly partings, ball and pillow structure	
52	(25°)	163.14	163.56	.42	.18	163.68	Silty Mudstone	occasional faint silty laminae, irregular fracture, calcareous, thick calcite veins parallel to bedding @ base	
52	31°	163.56	163.89	.33	.17		As Above		
52/53		163.89	166.57	2.68	1.38	166.73	Siltstone	light grey, sandy and muddy interlaminations and interbeds, cross-laminated, burrows, bioturbated, occasional carbonaceous laminae, 30cm mudstone interbeds at 45cm from base, calcite filled fractures in middle parallel to bedding	
53/54	29°	166.57	167.9	1.33	.64		Mudstone	silty and sandy interlaminations, especially in middle, coal stringers, numerous calcite filled fractures parallel to bedding, small pyrite cubes on fracture surface	
		167.9	168.5	.60	.29		Lost core		

Box No.	BCA (°)	Depth From	Depth To	App. Thick-ness (m)	True Thick-ness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
54		168.5	170.02	1.52	.74		Sandstone	broken, light grey, very dirty, looks like a channel lag deposit, coal clasts, rip-up mud clasts, coaly and carbonaceous laminae, fine grained, polished carbonaceous surfaces, calcite-filled fractures subparallel to bedding, calcareous , salt and pepper	
54		170.02	170.06	.04	.02	169.78	Mudstone	with silty laminations	
54	32°	170.06	170.21	.15	.08		Siltstone	with muddy laminations, calcite - filled fractures perpendicular to bedding	
54/55		170.21	171.73	1.52	.81		Mudstone	medium dark grey, thin coaly bands, mottled, faint laminations, polished carbonaceous surfaces, carbonaceous partings, thin wispy calcite veins parallel to bedding, occasional burrows	
55		171.73	173.02	1.29	.68	172.82	Mudstone	with silty and sandy laminations, 0.74m - 1.29m is silty, burrows, disturbed laminations, calcite veining parallel to bedding from 0.66 - 0.70m, calcareous	
56/57		173.02	176.01	2.99	1.58	175.87	Mudstone	silty in places, bottom half has silty interlaminations, medium grey, some sandy interlaminations @ base, calcareous, irregular fracture, no calcite veins	
57	35°	176.01	176.98	.97	.56	177.4	Carbonaceous Mudstone	very broken and ground in top half and @ bottom, coaly bands and interlaminations, very polished and sheared	
		176.98	177.5	.52	.33		Lost Core		
57	(45°)	177.5	178.41	.91	.64		Silty Sandstone	light grey, core is very broken and ground, some carbonaceous partings, 3cm thick calcite fracture .17m from bottom, burrows and soft sediments deformation, bioturbation, non-calcareous	
		178.41	179.4	.99	.70		Lost Core		

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
57/58	56°	179.4	181.62	2.22	1.84	180.44	Mudstone	with silty interbeds, irregular fracture, medium dark grey, occasional carbonaceous partings, coaly plant fragments in some horizons, one thick calcite - filled fracture near top, bottom 40cm is very broken, faint laminations in siltstone interbeds	
58/59	44°	181.62	184.62	3.0	2.08	183.64	Mudstone	silty, with muddy interbeds and interlaminae, medium grey, quite well laminated 3cm coal lens @ 0.77m from top, abundant polished carb partings, 5 calcite veins parallel to bedding, occasional thin coaly bands, mudstone interbed from .88m - 1.29m, and from 2.4m - 2.7m, very broken @ base and into short sticks throughout, cross-laminated, burrows, muddy interbeds, tend to be faintly laminated, where it is silty it is well laminated, muddy interbeds are slightly bioturbated	
	(51°)	184.62	184.78	.16	.12		Lost Core		
59/60	58°	184.78	185.28	.50	.42		Mudstone	with silty interlaminations, medium dark grey, cross-laminated	
60		185.28	185.81	.53	.45		Siltstone	sandy, pinched laminatins and mudclasts throughout, flame and ball and pillow structures, muddy @ top, silty @ bottom, 4 thick calcite veins parallel to bedding, medium grey, non-calcareous	
60		185.81	186.34	0.53	.45		Siltstone	medium grey, irregular fracture, non-laminated, rare coaly plant fragments, monotonous	
60/61	50°	186.34	188.47	2.78	2.13		Mudstone	medium grey, polished carbonaceous fracture surfaces, coaly interlaminations in places, thin coal bands, core is broken, silty interlaminations from 1.65m - bottom, 5cm coal band 0.74 from bottom, coaly stringers, carbonaceous in middle broken in middle, some bioturbation, non-calcareous	
61		188.47	188.58	.11	.08	186.34	Sandstone	silty, 2cm carbonaceous mudstone with coaly bands @ base, broken and ground @ base, laminated, contorted laminae	
	(53°)	188.58	189.07	.49	.39		Lost Core		
61		189.07	189.27	.20	.16		As Above	clean fractures perpendicular to bedding	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
61	57°	189.27	190.28	1.01	.85	188.06	Silty Mudstone	sandy from .53m - .63m, laminated, cross-laminated @ base, medium grey, thick calcite vein parallel to bedding @ top, occasional polished carbonaceous partings, very silty @ base, core is relatively broken	
61	40°	190.28	191.37	1.09	.70		Siltstone	sandy, muddy interlaminations, burrows in the muddy areas, ball and pillow structures, occasional coaly stringers, carbonaceous partings, clean joints perpendicular to bedding, irregular fracture, mostly sandy in the middle	
62		191.37	192.54	1.17	.75		Mudstone/ Siltstone	interbedded, cross-laminated, some bioturbation, ball and pillow structures, mudstone is medium dark grey, sandstone is light grey, @ base coaly band and calcite vein parallel to bedding	
62		192.54	193.04	0.50	.32	191.4	Siltstone	sandy from 0.40m - 0.90m, medium light grey, top 15cm is muddy and bioturbated, burrows, bottom 3/4 is well laminated with cross-laminations	
62		193.04	194.18	1.14	.73		As Above		
63	40°	194.18	196.12	1.94	1.25	194.16	Muddy Siltstone	contorted laminations, burrows, occasional sandy laminations, flame structures, calcite lined fractures that are slickensided, carbonaceous laminae, grey, calcareous	
63/64		196.12	197.98	1.86	1.20		As Above	sandy between 0.46m and 0.80m, 3 mudstone interbeds up to 15 cm thick, same sedimentary structures as above, calcite lined joint perpendicular to bedding	
64	(50°)	197.98	199.28	1.3	.77	197.21	Siltstone	medium light grey, sandy, jointing perpendicular to bedding (clean and calcite-lined), bioturbated at top, faintly laminated and muddy in middle	
64		199.28	199.5	.22	.17		As Above		

box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
64/65	60°	199.5	200.74	1.24	1.07		Sandstone	fine grained, calcite-lined fractures perpendicular to bedding, well laminated, ripple-bedding, salt and pepper, carbonaceous laminae, occasional mudclasts, dresser-type sand, top 10cm is silty	
65		200.74	202.24	1.5	.93	200.26	Siltstone	sandy, with muddy interbeds, laminated, cross-laminated, calcareous, medium grey, interbeds are from 5cm - 20cm thick, small fining - upwards sequences	
65	(56°)	202.24	202.59	.35	.29		As Above	very thin calcite healed fractures perpendicular to bedding throughout	
66		202.59	203.06	.47	.39		Sandstone	dirty, coal stringers and lenses, polished carbonaceous laminae, mudclasts, "channel-lag deposit", fine grained, light grey, salt and pepper, calcareous	
66	53°	203.06	204.02	.96	.77		Silty Mudstone	medium grey, occasional sandy laminations, bioturbated @ bottom, rootlet in middle, coaly lenses @ top, carbonaceous laminae, jointed parallel and perpendicular to bedding, polished carbonaceous partings	
66		204.02	204.95	.93	.74		Mudstone	dark grey, coaly lenses, irregular fracture, carbonaceous partings, carbonaceous plant fragments	
66		204.95	205.1	.15	.12	203.3	Carbonaceous Mudstone	with coaly interlaminations and lenses, abundant polished surfaces	
66	50°	205.1	205.15	.05	.04		As Above		
66/67		205.15	205.75	.60	.46	204.22	Carbonaceous Mudstone	bottom 30cm is very broken and has coaly bands, very coaly, abundant polished surfaces	
67		205.75	207.86	2.11	1.62	206.35	Mudstone	bottom 60cm is silty, carbonaceous @ top with abundant plant fragments, faintly bioturbated, burrows, medium grey, monontonous	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
67/68	48°	207.86	210.69	2.83	2.10	209.04	Mudstone	with silty mudstone interbeds, bioturbated, burrows, medium dark grey, coaly lenses, irregular fracture, carbonaceous plant fragments, carbonaceous partings, laminated and silty in bottom 0.50m, calcareous	
69/70	62°	210.69	213.46	2.77	2.45	212.45	Silty Mudstone	with siltstone interbeds, broken @ top, disturbed laminations, burrows, coal lenses, medium dark grey, 10cm sandy interbed 30cm from top, carbonaceous @ top with polished surfaces, coaly stringers, carbonaceous plant fragments, calcareous, occasional distinct laminations, broken @ botton, coaly @ base, irregular fracture, very thin calcite - filled fractures parallel to bedding, slightly carbonaceous in middle	
70	(56°)	213.46	214.48	1.02	.85		Mudstone	carbonaceous, broken throughout, coaly lenses and interlaminations, polished surfaces, greyish black, 0.56 - 0.62m is pyritized	
		214.48	216.19	1.71	1.42		Lost Core	coal lost between 214.04-214.76 and 217.53-217.78, no core recovered	
70	50°	216.19	216.86	.67	.51	215.5	Mudstone	silty, disturbed laminations, medium grey, thin calcite veins parallel to bedding, carbonaceous laminae, carbonaceous mudstone in middle, coaly lenses near bottom	
70	(45°)	216.86	217.13	.27	.19		As Above	shot through with calcite veinlets *coal lost, see end of log	
70/71	40°	217.13	217.78	.65	.42		Siltstone	light grey, muddy laminations, laminated throughout, rootlets, occasional cross-laminations, thin calcite veinlets near top, pinch and swell near bottom, irregular fracture, occasional carbonaceous laminations	
71	48°	217.78	218.9	1.12	.83		Mudstone	occasional silty interlaminations, medium dark grey, has coaly lenses, shot through with calcite veins parallel to bedding, siltiest in the middle, polished surfaces, carbonaceous plant fragments	
		218.9	218.97	.07	.05	218.54	Coal/Mudstone	dark grey, very carbonaceous, coal; bright and crisp .5cm thick bands, slickensided surfaces, very broken	17 Palynology
		218.97	219.14	.17	.12		Coal/Mudstone	as above, broken at top, bottom 1/3 is rubble	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
71		219.14	219.70	.56	.42		Lost Coal		
71/72		219.70	219.92	.22	.16	219.46	Coal/Mudstone	as above, abundant carbonaceous plant fragments, polished surfaces, hard	
		219.92	220.38	.46	.46		Lost Core		
72		220.38	220.54	.16	.12		Coal	bright and dull banded, fairly hard, some slickensided surfaces broken	
		220.54	221.39	.75	.56		Lost Coal		18 Bulk
72		221.39	221.59	.28	.22	221.59	Coal	dull lustrous, occasional bright bands, highly broken and rubbly	
		221.59	222.1	.51	.40		Lost Coal		
72		222.1	222.45	.35	.28		Coal	dull lustrous, a few bright bands, hard, slickensided surfaces, broken	
		222.45	222.96	.51	.40		Lost Coal		
72		222.96	223.10	.14	.11		Coal	mostly bright and crisp, well developed cleat, very light	16 Vitrainite
		223.10	223.32	.22	.17		Lost Coal		
72		223.32	223.84	.52	.41	223.16	Carbonaceous/ Mudstone	dark grey, very carbonaceous, coal; bright and crisp; silty at base	
72/73	52°	223.84	224.66	.82	.64	224.64	Siltstone/ Sandstone	interlaminated, a few muddy interlaminations in bottom 30cm, carbonaceous partings, coaly rootlets, disturbed laminae, sandstone light grey and very fine grained and cross-laminated, carbonaceous plant fragments, burrows	
73		224.66	226.69	2.03	1.60		Siltstone/ Mudstone	occasional fine grained sandstone interbeds (5cm thick), very ground at top, laminated and cross laminated, contorted laminae, burrows, calcite veining parallel to bedding, medium light grey, flame structures, bioturbation	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
73/74		226.69	229.5	2.81	2.21		Mudstone	with very fine grained sandstone interbeds 1.0 - 10.0cm thick, abundant rootlets, (mudstone - dark grey), burrows, flame structures, cross laminated, sandstone - light grey, bottom half has 20cm sandstone interbeds, ABUNDANT calcite veining - at 10 cm from top, 10cm interval shot through with "tension" fractures and calcite veins parallel to bedding, also has a microfault, 1/2cm thick, calcite vein parallel to bedding at base	
74	(56°)	229.5	229.78	.28	.23	227.69	Mudstone	silty dark grey, distorted laminations, coaly stringers, polished carbonaceous partings, broken at top and base, calcite filled fractures	
74		229.78	230.6	.82	.68	230.74	Mudstone	as above, a few sandstone interbeds, calcite veining abundant, becoming silty at base	
75	60°	230.6	231.86	1.26	1.09		Siltstone/ Mudstone	interlaminated, mottled, calcite filled fractures parallel to bedding, medium light grey rootlets, burrows, joints parallel to bedding are slickensided and are lined with calcite crystals, carbonaceous partings, calcareous	
75	(70°)	231.86	232.86	1.0	.94		Sandstone	fine to very fine grained, silty at top, rootlets, faintly laminated, very calcareous	
76	80°	232.86	233.84	.98	.97		Sandstone	80% sandstone very fine grained, 20% siltstone, interlaminations, calcareous cross-laminated, siltclasts, mottled, coarser towards base, light grey sandstone, medium light grey siltstone, occasional carbonaceous partings, calcareous	
76		233.84	234.28	.44	.43		Sandstone/ Siltstone	siltstone = 60%, sandstone = 40%, laminated, cross-laminated, burrows, bioturbated, calcite vein in middle sub parallel to bedding, bright coal stringers at the top	
76/77	75°	234.28	235.97	1.69	1.63	236.22	Sandstone	light grey, laminated, fine to medium grained, occasional 2cm thick sandstone interbeds, carbonaceous laminae, salt and pepper, disturbed laminations, mudclasts, abundant carbonaceous plant fragments, polished carbonaceous partings and vague cross-laminations	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
77	75°	235.97	237.65	1.68	1.62		Sandstone	as above - thick calcite band (3cm) at .46 from top abundant polished carbonaceous partings, calcite veining parallel and perpendicular to bedding, grades to medium grained at base	
78	75°	237.65	239.39	1.74	1.68		Muddy Siltstone	pyrite on joint surfaces, muddy towards base faintly laminated, @ .30m get 30cm of interlaminated sandstone (very fine grained) and siltstone, rootlets, disturbed laminations, pillar structure (dewatering), medium grey	
78/79	75°	239.39	242.02	2.63	2.54	242.62	Mudstone	with siltstone laminations mudstone/siltstone - 60%/40%, abundant calcite veins, rootlets, burrows, bioturbated becomes muddier at base, calcite and bright coal on joint planes parallel to bedding, coaly plant fragments	
		242.02	242.94	0.92	.89		Lost Core		
79/80	58°	242.94	245.2	2.26	1.92		Mudstone	as above	
80		245.2	246.03	.83	.70	245.62	Sandstone	fine grained becomes lower fine at base (ie. slightly coarser), siltstone laminations, abundant rootlets, carbonaceous partings, coaly stringers, calcite vugs and veinlets perpendicular to bedding, flame structures, distorted laminations - esp. due to rootlets, carbonaceous plant fragments	
80		246.03	246.32	.29	.25		Sandstone	as above	
80	(66°)	246.32	247.6	1.28	1.17		Mudstone	dark grey - top 0.5m has very fine grained sandstone interlaminations, the rest is very carbonaceous, calcite filled fractures subparallel to bedding throughout, carbonaceous plant fragments, calcareous, broken at base	
81		247.6	247.9	.30	.27		Lost Core	mudstone	
81		247.9	248.25	.35	.32		Coal	dull lustrous with bright bands, highly broken at top and base, broken at top bottom	
81		248.25	248.30	.05	.05		Lost coal		

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
81		248.3	248.5	.20	.19		Mudstone	greyish black, carbonaceous with carbonaceous plant fragments, bright coal stringers	
		248.5	248.86	.36	.35		Lost Core	mudstone	
81	74°	248.86	249.7	.84	.81	248.87	siltstone	with occasional very fine grained sandstone laminations, medium grey, muddy towards the top, bright coal stringers at the top, calcite filled fractures throughout sub parallel to bedding, burrows, bioturbation	
81/82		249.7	252.78	3.08	2.96	251.92	Siltstone/ Sandstone	interlaminated with occasional 10cm mudstone interbeds, sandstone: light grey, siltstone: medium grey, bright coaly stringers, cross laminated, abundant rootlets, carbonaceous partings, polished, calcite filled fractures sub parallel to bedding, bioturbated	
82		252.78	253.21	.43	.41		Siltstone/ Sandstone	as above	
82		253.21	253.49	.28	.27		Coal/Mudstone	mudstone: dark grey and carbonaceous, coal: thin and bright	
82		253.49	253.64	.15	.14		Lost Core	coal	
82		253.64	253.79	.15	.14		Coal	bright and crisp, sheared	
		253.79	254.06	.27	.26		Lost Core	coal	
82/83		254.06	255.82	1.76	1.69	255.12	Mudstone	very carbonaceous, 2 thin 1cm very fine grained sandstone interbeds at the top, carbonaceous polished partings, calcite filled fractures throughout, abundant carbonaceous plant fragments, bright coaly stringers	
83		255.64	255.95	.31	.30		Mudstone	as above	
83		255.95	256.44	.31	.30		Mudstone	greyish black, carbonaceous, abundant plant fragments, polished surfaces, interbedded, parallel bright thin coal bands especially at the bottom	Roof #26
		256.44	256.50	.06			Lost Core	coal	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
83		256.50	256.77	.27	.26		Coal	dull lustrous with bright bands, hard, broken at top	#19
83		256.77	256.88	.11	.11		Coal	dull with bright bands, muddy at bottom	
83/84		256.88	257.12	.24	.23		Mudstone	as before	#22
		257.12	257.16	.04	.04		Lost Core	mudstone	
84	70°	257.16	257.38	.22	.21	256.64	Coal	bright, occasional dull bands, friable and soft, crisp	#23
		257.38	257.63	.25	.23		Lost Coal		
84		257.63	257.73	.10	.09		Mudstone	as before, very broken	#20 Paly
		257.73	258.12	.39	.37		Lost Core	mudstone and coal	
		258.12	258.36	.24	.22		Lost Core	coal	
84		258.36	258.46	.10	.09		Coal	bright with occasional dull bands	#24 Bulk
		258.46	258.59	.13	.12		Lost Core	mudstone	
84		258.59	258.77	.18	.17		Mudstone	very carbonaceous with abundant plant remains, hard bright coal bands throughout	#21 Vitr.
84		258.77	258.87	.10	.09	258.17	Coal	dull and muddy, thin bright bands	#25 Bulk
84		258.87	259.12	.25	.23	258.47	Coal	dull lustrous, hard, occasional bright bands, polished surfaces	
		259.12	259.24	.12	.11		Lost Coal		
84	65°	259.24	259.83	.59	.55		Mudstone	carbonaceous, slickensides, less carbonaceous towards base, silty at base, grades from dark grey at top to medium grey at base, pyrite at top	Floor #26
84/85	65°	259.83	261.21	1.38	1.25		Siltstone	with numerous fine grained sandstone and mudstone laminations, rootlets, soft sediment deformation, bioturbation, "horsetail" wispy thin calcite veins parallel to bedding	
85		261.21	261.32	.11	.10		Mudstone	becomes very carbonaceous at base, very broken, dark grey	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
85		261.32	261.59	.27	.24		Mudstone	carbonaceous with abundant bright coal bands and interlaminations, highly broken	
85		261.59	261.64	.05	.05	261.22	Mudstone	greyish black, carbonaceous plant fragments, polished surfaces, slickensides, occasional coal stringers	
85		261.64	261.94	.30	.27		Mudstone	carbonaceous mudstone - abundant coal bands and stringers, coal interlaminations, sheared, slickensides, polished surfaces, broken at base, very coaly in places	
85		261.94	262.06	.12	.11		Coal	sheared, broken, dull lustrous	
85		262.06	262.27	.21	.19		Mudstone	dark grey, carbonaceous, slickensides, polished surfaces	
85		262.27	262.84	.57	.52		Mudstone	carbonaceous mudstone - abundant coal stringers, coal interlaminations, very coaly in places, broken	
85		262.84	263.0	.16	.15		Lost Coal		
85/86		263.0	263.52	.52	.47		Mudstone	very carbonaceous at base, dark grey, carbonaceous plant fragments, rare coal stringers	
86		263.52	263.61	.09	.08		Coal	sheared dull lustrous, occasional bright band, very broken	
86		263.61	264.66	1.05	.95	264.26	Mudstone	as before, rare coal stringers, slickensides	
86/87		264.66	267.22	2.56	2.32		Mudstone	as above, rare coal stringers, slickensides	
87		267.22	267.30	.08	.07		Mudstone	carbonaceous, bright coal stringers and interlaminations	
		267.30	267.63	.33	.30		Lost Core		
87		267.63	267.82	.19	.17	267.31	Mudstone	medium dark grey, abundant carbonaceous plant fragments, rootlets	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
87	65°	267.82	267.93	.11	.10		Mudstone	as above, very sandy and silty at base	
87	65°	267.93	268.4	.47	.43		Silty Sandstone	very fine grained siltstone and mudstone interlaminations, medium grey, calcite vein subparallel to bedding, carbonaceous plant fragments	
87/88		268.4	270.82	2.42	2.19	270.34	Mudstone	dark grey, occasional plant fragments, monotonous, rarely silty, ironstone concretion at base	
88		270.82	271.03	.21	.19		Mudstone	as above	
88/89	73°	217.03	273.9	2.87	2.74	273.41	Sandy Siltstone	with sandstone and mudstone interlaminations and occasional interbeds, medium grey, rare coal stringers slickensides, polished surfaces, occasional plant fragments, contorted laminae, bioturbated, ripples, rootlets	
89		273.9	274.58	.68	.62		Sandy Siltstone	as above	
90	70°	274.58	276.88	2.30	2.16	276.46	Siltstone	with mudstone and very fine grained sandstone interlaminations, more mudstone than last unit, bioturbations, cross-laminations, plant fragments, medium dark grey, mudstone interbeds are bioturbated	
91		276.88	278.44	1.56	1.47		Siltstone	as above, broken and ground at top. (from .4 to .9 sandy, contorted, carbonaceous plant fragments and rare coaly stringers)	
91		278.44	279.61	1.17	1.10	279.5	Mudstone	dark grey, broken at base, grades to carbonaceous mudstone at base, bright coal stringers and bands and interlaminations (ie. coaly mudstone at base)	
91/92	75°	279.61	280.32	.71	.69		Coaly Mudstone	as above bright coal bands up to .025m thick, very broken	
92		280.32	280.6	.28	.27		Lost Core		
92		280.6	281.95	1.35	1.30		Mudstone	monotonous, occasional coal stringers and numerous plant fragments	
		281.95	282.17	.22	.21		Lost Core		
92		282.17	282.45	.28	.27		Coaly Mudstone	abundant bright bands, coaly interlaminae, mudstone/coal 50%/50% in places	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
		282.45	282.65	.20	.19		Lost Coal		
92		282.65	283.0	.35	.34		Coal	dull lustrous with bright bands, powdered at base, some 2cm thick bright bands	
92		283.0	283.27	0.27	.26	282.5	Mudstone	numerous carbonaceous plant fragments, dark grey, rare coal fragments, no laminations	
92/93		283.27	285.5	2.23	2.15		Mudstone	as above, no laminations	
93		285.5	285.58	.08	.08		Carbonaceous Mudstone	powdered and broken	
		285.58	285.83	.25	.24		Lost Core	carbonaceous mudstone	
93		285.83	286.48	.65	.63	285.8	Mudstone	as before	
94		286.48	286.75	.27	.26		Mudstone	as above	
		286.75	286.8	.05	.05		Mudstone	carbonaceous, coaly bands, sharp contact at base	
94/95	75°	286.8	289.48	2.68	2.59	288.65	Siltstone	medium grey, very occasional plant fragments at top, becomes muddier with laminations and bioturbation at base, very occasional calcite veins throughout, slickensides	
95	(80°)	289.48	290.84	1.36	1.34		Muddy Siltstone	faintly laminated, some contorted laminations, bioturbation, rare coal stringers, plant fragments	
95/96	85°	290.84	292.39	1.55	1.54	291.7	Sandy Siltstone	occasional coal stringers, numerous sandstone, siltstone and mudstone interlaminations, cross laminations, ripple structures, carbonaceous laminations, slickensides parallel to bedding, grades to sandstone at base with abundant carbonaceous laminations, calcareous	
96/97	85°	292.39	295.31	2.92	2.91	294.75	Sandstone	light grey, very fine grained grades to medium grained at base, cross beds and channels, "channel lag", carbonaceous laminations, rare coal stringers, polished surfaces, carbonaceous plant fragments @ 1m from top; sand becomes coarser & cleaner going down, mudstone rip-up clasts, sharp lower contact, laminated throughout, stylolites, silty and carbonaceous laminations at top, calcareous	

Box No.	DCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
97/98	80°	295.31	298.47	3.14	3.09	279.77	Mudstone	dark grey, occasional silty laminae, rare bioturbation, occasional carbonaceous plant fragments, rare coal stringers, monotonous	
98/99	77°	298.47	301.49	3.02	2.94	300.84	Mudstone	as above, silty laminations near base, occasional polished surfaces, occasional plant fragments, rare plant fragments, rare slickensides	
99	77°	301.49	301.99	.5	.49		Mudstone	as above, vuggy calcite veinlet oblique to bedding	
99	77°	301.99	302.11	.12	.12		Lost Core		
99	77°	302.11	302.19	.08	.08		Mudstone	carbonaceous, coal bands and coal laminations, broken	
99	77°	302.19	302.27	.08	.08		Coal	bright and broken and powdered	
99	77°	302.27	302.37	.10	.10		Mudstone	very carbonaceous, abundant coal stringers	
99	(67°)	302.37	302.46	.09	.08		Mudstone	carbonaceous, very coaly, bright coal bands, broken	
99		302.46	302.7	.24	.21	302.21	Mudstone	carbonaceous, bright coal stringers, polished surfaces, broken, carbonaceous plant fragments	
99		302.7	302.98	.28	.26		Lost Core		
99/100		302.98	304.53	1.55	1.43	303.89	Mudstone	carbonaceous plant fragments, 1cm thick coal stringers at top, silty with bioturbations near base, broken at top, carbonaceous mudstone at top 5cm	
100		304.53	305.0	.47	.43		Mudstone	as above - rare plant frags and rare coal stringers, sharp contact at base	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
100/101	(58°)	305.0	307.59	2.59	2.20	306.92	Sandstone	silty at top, thin mudstone and siltstone interbeds on top 3/4, light grey, grades from very fine grained at top to fine grained, with some medium grained at bottom, carbonaceous laminae at bottom, contorted laminae and burrows in top half, bottom is well laminated with ripples, calcareous, very dirty at base, polished carbonaceous partings and calcite veins sub parallel to bedding at top, "channel lag"	
101/102	(56°)	307.59	310.11	2.52	2.14		Mudstone	carbonaceous, abundant plant fragments, polished surfaces, relatively broken throughout, greyish black, coal lenses and stringers throughout, coaly intervals at .48m - .54m, .59m - .68m, 1.65m - 1.82m, less carb. in bottom half, coaly intervals dull with bright bands	
102	(49°)	310.11	311.61	1.50	1.13		Mudstone	slightly carbonaceous thick bright coal bands, coaly interval of dull and bright coal at .39m - .5m, 1.07m - 1.16m, greyish black, v. broken in middle, some horizons have abundant coal laminations, bottom 30cm has abundant coal bands up to 2cm thick	
103	(49°)	311.61	312.61	1.0	.75		Mudstone	dark grey, wispy calcite veins throughout, some coaly interlaminations, carbonaceous plant fragments abundant in some horizons, some polished carbonaceous partings	
103	(49°)	312.61	313.16	.55	.54		Mudstone	slightly silty, horizontal calcite veins, calcareous	
103/104	40°	313.16	316.19	3.03	1.95	316.08	Mudstone	very carbonaceous near top, 3cm thick bright coal band, silty interbeds from .43m - .5m, very coaly and broken from .8m - .94m, broken at base, bedding steepens at base, faintly laminated with polished partings at base, broken at base	
104	60°	316.19	316.29	.10	.09		Mudstone	grades to siltstone at base	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
104/105	60°	316.29	319.03	2.74	2.37	319.13	Siltstone	well laminated, sandstone and mudstone interlaminations, rootlets near top, mudstone interbeds 2cm - 15cm thick (esp. at top), wispy calcite veins parallel to bedding, muddy interbeds are bioturbated, some burrows, medium grey, polished carbonaceous partings, cross-laminations, ripples at base, some contorted laminations, some flame structures, some ball & pillow structures, muddier towards top, siltier towards bottom	
105	60°	319.03	320.21	1.18	1.02		Siltstone	as above - though there is a decrease in mud, large ripples at base	
		320.21	320.6	.39	.34		Lost Core		
105/106	60°	320.6	321.06	.46	.40		Mudstone	very broken, polished surfaces, carbonaceous towards base	
106	60°	321.06	321.31	.25	.22		Mudstone/Coal	bright interlaminations & bands up to 2cm thick, polished surfaces, grey black, 60% mudstone, 40% coal, very broken	
	(80°)	321.31	321.66	.35	.34		Lost Core		
106		321.66	322.2	.54	.53		Mudstone	carbonaceous, abundant coal bands & interlaminations especially in upper half, powdered & broken at base	
		322.2	322.52	.32	.32		Lost Core		
106		322.52	323.20	.68	.67	322.18	Mudstone	medium grey, broken at top, irregular fracture, calcareous, abundant carbonaceous plant fragments, monotonous, no laminations	
106/107	80°	323.20	325.35	2.15	2.12		Mudstone	as above, silty towards base, occasional slightly silty horizons throughout, slightly carbonaceous, .35m from bottom is a 3cm band of wispy calcite veinlets	
107		325.35	326.14	.79	.78	325.22	Mudstone	silty, occasional sandy laminations, some contorted laminations, some bioturbations, at .38m and .62m is thick calcite veining, slightly brecciated, calcareous, some carbonaceous plant fragments, rare bright coal stringers	
107		326.14	326.32	.18	.18		Mudstone	as above	

Box No.	bCA (°)	Depth From	Depth To	App. Thick-ness (m)	True Thick-ness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
107/108	85°	326.32	327.39	1.07	1.07		Siltstone	muddy at top, sandy at bottom, laminated, cross-laminated ripples, burrows and rootlets near top, mudstone interbed, from .77m - .92m, horizontal slicked carbonaceous calcite vein	
108		327.39	328.03	.64	.64		Sandstone	medium grey, coarsens downward, carbonaceous plant fragments and carbonaceous laminations, cross-laminated near bottom, 2cm thick horizontal calcite vein in middle, sharp contact at base with mudstone, vertical calcite filled joints, very calcareous	
108		328.03	328.73	.70	.70		Mudstone	carbonaceous, and broken at base, greyish black, coal bands & interlaminations at base, calcite veins near horizontal, carbonaceous plant fragments	
108		328.73	329.25	.52	.52	328.27	Silty Mudstone	slightly sandy interbeds, heavily calcite veined at base for 3cm, rootlets, laminations, occasional coaly stringers	
108/109	78°	329.25	330.38	1.13	1.11		Silty Mudstone	as above - burrows and rootlets top 28cm is mudstone interbed, sandy from .66m - .86m	
109		330.38	331.57	1.19	1.16		Mudstone	dark grey, bottom 30cm is silty, irregular fracture, some horizons have coaly and carbonaceous plant horizons, generally monotonous, pyrite nodule	
109		331.57	332.34	.77	.75	331.32	Siltstone	laminated, cross-laminations at top, slightly sandy at top, bottom half is burrowed and bioturbated, occasional carbonaceous plant fragments, calcareous,	
109/110		332.34	332.43	.09	.09		Siltstone	irregular fracture, as above	
110/111		332.43	335.38	2.95	2.89	334.36	Sandstone	grades from silty at top to medium grained at base, light grey, top 1m is distinctly laminated & cross-laminated with carbonaceous, plant fragments, sand, mud and silt, wispy calcite veining, below 1m are coaly stringers and bands, pinch & swell structures in mudstone interbeds, mud, clasts, rather dirty, broken, "channel lag"	

Box No.	BCA (°)	Depth From	Depth To	App. Thick-ness (m)	True Thick-ness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
		335.38	337.4	2.02	1.98		Sandstone	as above, top .76m is same as bottom of last unit, dirty with mud clasts & coal stringers, .76m – 1.5m is well laminated, polished carbonaceous partings, bottom is dirty with mud clasts & coal stringers, "channel lag", calcareous, sharp contact at base with muddy siltstone	
111/112	75°	337.4	337.56	0.16	.15	337.41	Muddy Siltstone	laminations, burrows, rootlets, broken at base, calcareous, 3cm thick brecciated calcite vein 11cm from top, no large displacement apparent	
112	(75°)	337.56	338.58	1.02	.99		Mudstone	dark grey, monotonous, near horizontal calcite veins, calcareous, irregular fracture, sharp contant with sandstone at base, wispy calcite veining	
112	18°	338.58	339.98	1.40	.43		Sandstone	FAULT – abundant calcite veining throughout, irregular in orientation, heavy veining and brecciation in top 38cm, coal stringers, polished surfaces, vertical joints, very fine grained and dirty at top, bottom silty interlaminations	
113		339.98	340.46	.48	.15	340.46	Sandstone	brecciated and broken, every surface is polished, near vertical joint, calcareous abundant coaly stringers as above	

END OF HOLE

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

Project	Falling Creek
Location	S4

Begin	Sept 17/81	
End	Sept 21/81	

Core Examiner(s)	B. Wright
L. Klatzel-Mudry	S. Carr

Hole No.	81-3

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Hole Particulars

Location	62046 mE 40513 mN		
Elevation	1183 m		
Total Depth	291.8 m	Hole Bearing Hole Angle	

Coal Coring Performance

Core Diameter	HQ
Core Recovered	271.49 m
Length Cored	291.8 m
Core Recovery	93.04 %

Cumulative true thickness - 260.02 m

Logging B.P.B.

Logged By	Neil Harvey
CCS	
Neutron Neutron	
Dip Meter	

Examination Date	Sept 22/81 Sept 24/81

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
1		17.48	17.94	.46	.44	17.98	Mudstone	dark grey, highly broken, carbonaceous plant fragments, bright coal stringers	
1		17.94	19.74	1.8	1.71	20.42	Mudstone	as above	
1-2-3		19.74	22.77	3.03	2.88	23.47	Mudstone	as above, last 20cm is silty, occasional coaly plant fragments, occasional carbonaceous partings, highly broken and pulverized in the middle	
3		22.77	23.09	.32	.30		Mudstone	as above, polished carbonaceous partings, abundant coal stringers	
3	72°	23.09	25.45	2.36	2.24		Siltstone	medium light grey, occasional very fine grained sandstone interlaminations, sandstone-light grey (salt & pepper), medium grained sandstone, 10cm thick band 17 cm from base of unit, rootlets, carbonaceous partings, coaly stringers, disturbed laminations, rip up mud-clasts near base	
4		25.45 25.73	25.73 25.93	.28 .20	.27 .19	26.52	Lost Core Mudstone	dark grey, carbonaceous, broken at top, bright coaly stringers, carbonaceous partings	
4	(65°)	25.93	27.7	1.77	1.60		Mudstone	as above, broken in places	

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Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
4-5		27.7	28.99	1.29	1.17	29.57	Siltstone	muddy, medium grey, mottled, calcite filled fractures perpendicular to bedding, occasional carbonaceous plant fragments	
5		28.99	30.35	1.36	1.23		Siltstone	muddy at the top with occasional muddy interbeds, medium grey, 1 long vertical joint in center, slightly sandy towards the base	
5	60°	30.35	30.75	.40	.35		Carbonaceous Mudstone	greyish black, coaly band 10cm from top, calcite filled fractures subparallel to bedding, carbonaceous partings, carbonaceous and coaly plant remains	
5-6		30.75	31.75	1.00	.87		Siltstone	sandy laminations, carbonaceous partings, uneven fracture, burrows and rootlets, medium grey, sandstone laminations are light grey	
6		31.75	32.03	.28	.24	32.63	Mudstone	carbonaceous, greyish black, broken at top, bright coaly stringers, coaly and carbonaceous plant fragments, disseminated pyrite, some calcite filled fractures subparallel to bedding, broken at top	
6	[56°]	32.03	32.34	.31	.26		Mudstone	as above, bottom 10cm is silty	
6		32.34	32.72	.38	.32		Siltstone	muddy, medium dark grey, 5cm sandy band 5cm from bottom, carbonaceous partings, non-laminated except for sandy band, carbonaceous and coaly plant fragments, disseminated pyrite	
6-7		32.72 32.9	32.9 33.6	.18 .70	.15 .58		Lost Core Mudstone	carbonaceous, greyish black, coal stringers, polished surfaces, highly broken at the top, silty at base	
7		33.60	34.91	1.31	1.09	35.66	Siltstone	medium grey, muddy siltstone interbeds up to 10cm thick, irregular fracture, rootlets, coaly stringers, carbonaceous partings	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
7-8	52°	34.91	37.19	2.28	1.80	38.71	Siltstone	medium dark grey, occasional very fine grained light grey sandstone laminations coaly stringers, disturbed laminations, carbonaceous partings throughout, coaly plant remains, irregular fracture, laminated, cross-laminated, rootlets, burrows, bioturbated, ball and pillow structures, becomes very sandy towards base, mud clasts, occasional calcite fractures parallel to bedding	
8		37.19	37.69	.5	.39		Siltstone	as above broken in middle	
8-9	52°	37.69	39.53	1.84	1.45		Sandstone	fine grained, coarsens to medium grained at base, top .5m is laminated with siltstone interlaminations, contorted bedding, rootlets, carbonaceous partings throughout, from .5m to base, this unit is extremely carbonaceous with abundant coal stringers and bands, carbonaceous partings are polished, scour and fill	
		39.53	40.24	.71	.56		Lost Core		
9	52°	40.24	40.56	.32	.25	41.76	Siltstone	medium grey, slightly sandy, monotonous	
9	52°	40.56	41.42	.86	.68		Siltstone	as above, occasional muddy interbeds, fractures almost perpendicular to bedding, carbonaceous plant remains, faintly laminated	
		41.42	42.14	.72	.57		Lost Core		
10	52°	42.14	43.81	1.67	1.32		Sandstone	Fine grained, silty interlaminations, rootlets, carbonaceous polished partings, flame structures, burrows, small mud clasts in one horizon, iron-stained fracture surfaces, relatively broken	
10	75°	43.81	44.43	.62	.60	44.81	Sandstone	medium grained, salt and pepper, scour and fill, coaly stringers, mudstone, dirty, poorly sorted, faintly laminated, cross laminated, bioturbated in places, broken	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
10	[71°]	44.43	44.63	.2	.19		Sandstone	as above	
10/11	63°	44.63	47.35	2.72	2.42		Siltstone	sandy laminations, a few muddy interbeds, disturbed bedding, flame and ball and pillow structures, calcite filled fractures sub parallel to bedding, carbonaceous partings, becoming muddier towards the base, medium light grey, iron-staining on fracture surfaces	
11/12		47.35	50.10	2.75	2.45	50.90	Silty/Mudstone	medium dark grey, very carbonaceous and coaly in bottom .5m, carbonaceous partings abundant, clean fractures almost perpendicular to bedding,	
		50.10	50.36	.26	.23		Lost Core	broken at bottom	
12/13		50.36	51.4	1.04	.93		Mudstone	greyish black, bright coal stringers, polished carbonaceous partings, abundant carbonaceous plant fragments, broken at top	
13		51.4	51.78	.38	.34		Coal/Mudstone	greyish black, carbonaceous, coal is very bright, polished carbonaceous surfaces, broken at top and base	
		51.78	52.2	.42	.37		Lost Core		
13		52.2	52.56	.36	.32		Mudstone	dark grey, abundant carbonaceous plant fragments, occasional coal stringers and bands, relatively broken	
13	[68°]	52.56	53.34	.78	.72		Siltstone	muddy, a few sandstone laminations, bright coal stringers are abundant, carbonaceous plant fragments, carbonaceous laminae and partings, medium dark grey	
13/14		53.34	53.64	.3	.28	53.65	Sandstone	very fine grained, light grey, muddy interbeds, muddy laminations, flame and ball and pillow structures, calcite filled fractures sub parallel to bedding, carbonaceous partings	
14		53.64	53.86	.22	.19		Mudstone	very carbonaceous, sandy at top, carbonaceous plant fragments, greyish black	
14		53.86	54.50	.64	.59		Coal	mostly bright, occasional dull bands, bottom .25 is dull lustrous with bright bands	vitrainite 27 palynology 28
14		54.50	55.06	.56	.47		Lost Coal		

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
14	72°	55.06	56.76	1.7	1.62	57.00	Mudstone	rare sandstone laminations, silty in places, calcite filled fractures parallel to bedding, carbonaceous plant remains, medium dark grey, coaly stringers at the top	
14	[70°]	56.76	56.98	.22	.21		Mudstone	as above, becoming silty towards base	
14/15	68°	56.98	57.63	.65	.60		Sandstone/ Siltstone	interlaminated, sandstone - very fine grained, light grey, siltstone - medium grey, burrows, calcite filled fractures, occasional mud laminations, bioturbated	
15		57.63	59.58	1.95	1.81	60.05	Mudstone	silty, bottom 1/2 is carbonaceous mudstone, polished carbonaceous bright coal stringers, calcite filled fractures, rare fine grained sandstone laminations especially in top 1/2	
15/16		59.58	61.30	1.72	1.59		Carbonaceous Mudstone	dark grey, monotonous, relatively broken, vertical fractures, clean, coal stringers and bands at bottom, irregular fracture, polished fracture surfaces	
		61.30	62.0	.70	.62		Lost Core		
16		62.0	62.10	.10	.09		Coal/Mdst	60% coal, 40% mudstone, hard, interlamination, thin bright cleat bands, broken	
16		62.10	62.25	.15	.14		Coal	powdered, dull with bright	
		62.25	62.9	.65	.60		Lost Coal		
16		62.9	63.14	.24	.22	63.09	Siltstone	medium light grey, coaly plant fragments, irregular fracture, muddy interbeds, bottom is churned	
16-17	70°	63.14	63.93	.79	.74		Siltstone	as above, faint laminations	
17	65°	63.93	65.83	1.90	1.72	66.16	Siltstone	with sandy laminations, rare coal stringers, carbonaceous plant fragments, at 1m mudstone interbed 30cm app. thick, occasional muddy interlaminations throughout, bioturbated in places silt - mud, most partings (laminated surfaces) are carbonaceous, grades to fine sandstone for bottom 23 cm	
18		65.83	65.88	0.05	.05		Sandstone	with carbonaceous laminated surfaces, laminated, sharp contact at base with mudstone	

Box No.	BCA (°)	Depth From To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
18		65.88-67.26	1.38	1.25		Mudstone	rare coal stringers + plant fragments, dark grey monotonous, no laminations, irregular fracture, slickensides surfaces subparallel to bedding, grades to siltstone at base	
18/19		67.26-68.76	1.50	1.36		Sandy/Siltstone	medium grey, siltstone at top grades to sandstone at base, plant fragments, non laminated distinctive, homogeneous, rare coaly fragments, sharp contact at base with mudstone	
19		68.76-68.84	.08	.07	69.19	Mudstone	coaly stringers and bands, carbonaceous, dark grey	
19		68.84-69.10	.26	.24		Carbonaceous Mudstone	numerous coal bands stringers and interlamination, broken greyish black	
19		69.10-69.30	.20	.18		Mudstone	carbonaceous plant fragments	
19		69.30-69.54	.24	.22		Coal	top 0.09 dull lustrous with bright bands (stick) .15 dull with occasional dull bands all broken	
		69.54-70.00	.46	.42		Lost Coal		
19	[67°]	70.00-70.28	0.28	.26		Mudstone	carbonaceous, very broken, abundant coal bands stringers, very carbonaceous	
19		70.28-70.48	0.20	.18	70.45	Mudstone	very broken, carbonaceous plant fragments	
19		70.48-70.75	0.27	.25		Lost Mudstone		
19		70.75-71.03	.28	.26		As Above	bright coal stringers, grades to siltstone	
19/20		71.03-72.86	1.83	1.68		Siltstone	finely laminated, with mudstone and sandstone, ripple structures, bioturbated, rootlets, plant fragments, rare coal stringers, occasionally muddy @ 0.45 - 0.6 and at 0.9 - 1.5, calcareous	
20	70°	72.86-73.74	0.88	.83	73.76	Mudstone	faint silty laminations, occasional coal stringers, carbonaceous plant fragments	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
20		73.74	74.11	.37	.35		Mudstone	carbonaceous plant fragments, slickensides and coal stringers, dark grey	
20/21	70°	74.11	74.61	.50	.47		Siltstone	sandy and muddy interlaminations, ripple drift structures, bioturbation, rare coal stringers and plant fragments, medium grey	
21	65°	74.61	75.08	.47	.43	75.29	Mudstone	dark grey, silty interlaminarions, occasional bioturbations, plant fragments, rare coal stringers	
21		75.08	75.34	.26	.24		Mudstone	as above, grades to carbonaceous mudstone at base	
21		75.43	75.49	.06	.05		Coal	bright	
		75.49	75.58	.09	.08		Coal	dull band all broken	
		75.58	75.61	.03	.03		Coal	bright	
		75.61	75.64	.03	.03		Coal	dull band	
		75.64	75.76	.12	.11		Coal	dull and bright	
21		75.76	76.10	.34	.32		Lost Coal		
21		76.10	77.16	1.06	.99		Carbonaceous Mudstone	broken, greyish black	
21	(70°)	77.16	77.21	.05	.05		Coal	dull banded ┐ Broken + powdered	
21/22		77.21	77.40	.19	.18		Coal	hard dull occasional bright bands ┘	
22		77.40	77.92	.52	.49		Lost Coal		
22		77.92	78.12	.22	.21		Carbonaceous Mudstone	@ 0.05 - 0.07 ash band, powdered bright coal bands, coal interlaminations, abundant plant fragments	29
22		78.12	78.25	.13	.12	78.33	Mudstone	occasional coal stringer, dark grey, carbonaceous plant fragments, very faint laminations, broken in places	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
22	75°	78.25	80.35	2.10	2.03		Mudstone	as above/broken in places, powdered 0.5 and .9 and 1.1, silty @ base, bioturbated @ base, slickensides, horsetail calcareous stringers @ 1.6 and @ 2.0, ash band @ 0.3	
23		80.35	81.15	0.8	.77	81.38	Siltstone	medium grey, abundant sandy laminations, bioturbations, carbonaceous fragments and stringers, some well developed burrows, ripple drift	
23	75°	81.15	82.55	1.4	1.35		Siltstone	as above, muddy @ base, wispy horsetail calcareous stringers @ .90	
23/24		82.55	84.23	1.68	1.62	84.43	Mudstone	dark grey, carbonaceous plant fragments, wispy calcareous stringers, rare coal stringers, rare sandy laminations, rare bioturbation	
		84.23	84.43	.20	.19		Lost Core		
24		84.43	86.10	1.67	1.61		Mudstone	dark grey/homogeneous, monotonous/occasional plant fragments/coaly @ base	
24	[77°]	86.10	86.15	0.05	.05		Coal	boney coal with bright bands	30
24		86.15	86.24	0.09	.09		Coal	dull/occasional bright bands	
25		86.24	86.31	0.07	.07		Coal	boney coal with bright bands	
		86.31	86.71	0.40	.40		Coal	dull lustrous with fusain bands	
		86.71	86.76	0.05	.05		Lost Core	Coal	
25		86.76	86.92	0.20	.19		Ash	ash band	32
	80°	86.92	87.12	0.20	.20		Coal	dull lustrous with bright bands	
		87.12	87.26	0.14	.14		Coal	dull and bright	
		87.26	87.41	0.15	.15	87.48	Coal	dull and bright sheared	
		87.41	87.49	0.08	.08		Coal	bright	
		87.49	87.74	0.25	.25		Lost Coal		

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
25		87.74	88.68	1.18	1.16		Mudstone	carbonaceous, plant fragments, silty with ripple drift bioturbation laminations in middle, carbonaceous mudstone at top, slickensides, occasional wispy calcareous stringers, medium grey	
25/26	75°	88.68	90.34	1.66	1.60	90.53	Siltstone	medium grey, occasional muddy laminations, bioturbated, carbonaceous plant fragments, carbonaceous partings, coal stringers near base, wisps subparallel bedding	
26		90.34	91.15	.81	.78		Siltstone	as above, grades to mudstone at base	
26/27	80°	91.15	93.39	2.24	2.21	93.57	Mudstone	dark grey, occasional coal stringers, numerous wispy calcareous stringers sub-parallel to bedding, occasional silty - sandy, some bioturbation, polished surfaces, rootlet, broken at top	
27/28		93.39	96.28	2.89	2.85	96.62	Mudstone	as above/sandy 0.6 - 0.8m/increased carbonaceous material @ base	
28/29	80°	96.28	99.34	3.06	3.01	99.67	Mudstone	dark grey, abundant plant fragments and coal stringers, numerous slickensides at base, faintly laminated, more carbonaceous and no calcareous stringers, no silt, occasionally broken, grades to carbonaceous	
29		99.34	99.58	0.24	.24		Mudstone	as above	
29		99.58	100.40	0.82	.81		Mudstone	silty, wispy calcareous stringers, dark grey, carbonaceous plant fragments, rare coal stringers, polished surfaces, grades to siltstone @ base, very faint laminations	
30	80°	100.40	102.58	2.18	2.15	102.72	Siltstone	occasionally muddy and sandy, rare coal stringers, carbonaceous plant fragments, rare calcite veins, bioturbation, ripple drift where sandy, medium grey, calcareous	
30/31	70°	102.58	105.00	2.42	2.27		Siltstone	as above, moderate laminations, grades to carbonaceous mudstone @ base	
		105.11	105.30	.19	.18		Lost Coal		
31		105.30	105.35	.05	.05		Coal	dull occasional fusain bands	
		105.35	105.75	.40	.38		Coal	dull lustrous with bright bands, occasional fusain bands	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
		105.75	105.83	.08	.08		Coal	dull and bright 50:50, very broken	
		105.83	105.85	.02	.02	105.77	Carbonaceous Mudstone	with bright coal bands	34
		105.85	106.04	.19	.18		Carbonaceous Mudstone	as above, dark greyish black	
		106.04	106.22	.18	.17		Lost Coal		
		106.22	106.28	.06	.06		Coal	sheared coal, bright banded	
		106.28	106.35	.07	.07		Coal	bright	33
31		106.35	106.38	.03	.03		Coal	dull banded very broken	
31/32	75°	106.38	108.73	2.35	2.21	108.81	Carbonaceous Mudstone	numerous bright coal bands up to .08 in thickness, numerous coal horizons with thin coal stringers and interlamination 10cm thick common, abundant polished surfaces and slickensides, bright coal occasionally powdered	
32/33		108.73	109.76	1.03	.99		Carbonaceous Mudstone	as above	
33		109.76	110.98	1.22	1.18		Mudstone	dark grey, distinctly less carbonaceous than above, rare coal stringers, occasional plant fragments, slickensides	
33/34	70°	110.98	111.95	0.97	.91	111.86	Siltstone	faint laminations, medium dark grey, sandy laminations in centre, bioturbated, plant fragments, rare coal stringers	
34/35	70°	111.95	114.28	2.33	2.19	114.91	Mudstone	faint laminations, silty at top above 1st coal, dark grey, carbonaceous plant fragments, slickensides, @ 0.66 - 0.78 coal dull lustrous with 3cm bright band centre, @ 2.07 - 2.28 coal dull lustrous with bright bands, coal stringers throughout and very carbonaceous, faint bioturbations in top laminations	
		114.28	114.7	.42	.39		Lost Core		

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
35		114.7	117.29	2.59	2.43	117.96	Carbonaceous Mudstone	with coal stringers, greyish black, polished surfaces, coal bands & interlaminations relatively broken, slightly silty and less carbonaceous in centre, coaly plant fragments	
35		117.29	117.47	.18	.17		As above		
36	70°	117.47	118.93	1.46	1.37		Siltstone	sandy, mudstone interlaminations & interbeds, gets muddier towards base, laminations & cross-laminations, rootlets, burrows, calcareous, few coaly stringers, calcite vein parallel to bedding, bioturbated in muddy areas, light grey	
36		118.93	119.66	.73	.69		Siltstone	muddy, well laminated, occasional coal bands, abundant carbonaceous plant fragments, medium grey, irregular fracture	
		119.66	120.22	.56	.53		Lost Core		
36		120.22	120.93	.71	.67		Mudstone	carbonaceous with coaly bands @ top, silty @ bottom, carbonaceous plant fragments, horizontal slickensides, bottom half is bioturbated with rootlets	
37		120.93	122.37	1.44	1.35		Mudstone	silty in places (especially at bottom), homogenous, carbonaceous plant fragments, rootlets @ top, non-calcareous, polished carbonaceous partings, medium grey	
37/38		122.37	124.04	1.67	1.57	124.06	Siltstone	muddy, medium grey, laminated, non-calcareous, slightly sandy in bottom 10cm	
38/39	75°	124.04	127.14	3.1	2.99	127.10	Siltstone	with mudstone and siltstone interbeds & interlaminations, generally laminated, muddy interbeds are bioturbated, ripples @ top, ball & pillow structures, medium grey, non-calcareous, occasional coaly plant material, hard, not jointed, sandy parts are laminated & cross-laminated	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
39/40		127.14	130.35	3.21	3.10	130.10	Siltstone	as above, from 1.64 - 2.36m is very finely laminated and rippled and broken, thick horizontal calcite veining @ 2.57m, bottom 60cm is well laminated, calcite vein @ the bottom	
40/41	70°	130.35	132.49	2.14	2.01		Siltstone	sandy, ripples @ base, are muddy interbeds which have burrows and are bioturbated, ball & pillow structures, rootlets in some horizons, broken in middle, generally distinctly laminated	
41/42A		132.49	136.27	3.78	3.55	136.25	Mudstone	greyish black, large vertical calcite filled fractures and joints, siltstone interbed (laminated) from 0.66m - 1.1m, (marker block 133.2 @ 82cm from top), carbonaceous plant fragments, irregular fracture, non-calcareous, slightly carbonaceous in middle, thin wispy calcite veining in centre, (minor), occasional carbonaceous partings	
42A		136.27	137.4	1.13	1.06		As Above	coaly bands & interlaminations, very carbonaceous towards the base, slightly silty	
42A		137.66	137.83	.17	.16		Lost Coal		
		137.83	138.02	.19	.18		Coal	dull lustrous with bright bands, hard, cleat, broken	
42A/B		138.02	138.43	.23	.22	139.3	Mudstone/Coal	bright bands and interbeds, polished surfaces, less coaly towards bottom, carbonaceous plant fragments @ bottom, broken * between 138.15-138.28 lost coal	
42B		138.43	138.75	.32	.30	140.21	Mudstone	with coal bands, carbonaceous, polished surfaces & plant fragments, occasional bright bands, bottom 15cm is not carbonaceous, very broken	bulk 35 vitrainite 36
42B		138.75	138.88	.13	.12		Mudstone	dark grey, plant fragments, polished surfaces	palynology 37
42B		138.88	139.08	.20	.19		Mudstone Breccia	square to rounded clasts, surrounded by calcite matrix, high S.G., vugs, clasts are .3cm - 2cm, average size is .75cm Lost coal for .19 m within this interval	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
42B		139.08	139.22	.14	.13		Mudstone	dark grey, carbonaceous plant fragments, rare thin coal stringers	
		139.22	139.34	.12	.11		Lost Core		
42B		139.34	139.65	.31	.30		Coal	dull lustrous with very thin bright bands, vertical joints, quite hard, rubbly @ bottom	
42B		139.65	139.77	.12	.11	141.28	Mudstone	very sheared and polished, dark grey, carbonaceous plant fragments	
		139.77	140.64	.87	.87		Lost Core Mdst		
42B		140.64	140.86	.22	.21		C. Mdst/Coal	thin bright bands & interlaminations, polished, greyish black	
		140.86	141.24	.38	.26		Lost Coal	dirty coal parting in seam indicated from density log	
		141.24	141.37	.13	.12		Coal	muddy, dull bands, thin bright coal bands, very broken	
42B		141.37	141.42	.05	.05		Mudstone	dark grey, broken, rare bright thin coal lenses	35
		141.42	141.94	.52	.48		Lost Core Mdst		
		141.94	142.19	.25	.23		Lost Core Coal		
42B		142.19	142.28	.09	.08		Coal	with mudstone bands, coal is bright with dull, mudstone has coaly interlaminations	
		142.28	143.07	.79	.74		Lost Core		38
42B		143.07	143.35	.28	.26	142.95	Mudstone	carbonaceous, occasional thin bright coal bands & laminations (especially near top), polished surface, carbonaceous plant fragments	
43		143.35	143.66	.31	.29		Mudstone	carbonaceous, thin bright coal bands and interlaminations throughout, occasional dull lustrous bands, very broken, occasional 1cm thick bright coal bands	
43		143.66	143.75	.09	.08		Coal	dull lustrous with thin bright bands, hard	38 vitrainite 39
43		143.75	143.90	.15	.14		Coal	dull lustrous, very rare bright bands, hard	vitrainite 40
43		143.90	144.34	.44	.41		Coal	dull lustrous with occasional bright bands, very hard, cleated	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
43		144.34	144.50	.16	.15		Coal	dull lustrous with bright bands up to 0.5cm thick	
43		144.50	144.64	.14	.13		Coal	dull & bright	38
43		144.64	144.69	.05	.05	144.48	Coal	broken, powdery, mudstone with thick bright coal bands	
		144.69	145.04	.35			Lost Coal		
43/44	75°	145.04	146.76	1.72	1.66	146.46	Mudstone	silty in middle, muddy from 0.49m - 1.29m, dark grey, silty part is laminated and cross-laminated, irregular fracture, polished carbonaceous partings, occasional coal stringers, wispy calcite veins parallel to bedding, mudstone becomes carbonaceous towards base	
44		146.76	147.67	.91	.88	147.53	Mudstone	carbonaceous, greyish black, carbonaceous plant fragments, non-calcareous, irregular fractures, polished carbonaceous partings, coaly stringers, near base, broken and slickensided @ base, wispy calcite veins parallel to bedding throughout	
		147.67	147.76	(.09)	(.32)		Lost Mdst Core		
44		147.76	148.24	.48	.46		Mudstone	medium grey, broken and ground @ top, occasional coaly stringers, non-calcareous, polished surfaces	
44		148.24	148.6	.36	.35	148.44	Mudstone	carbonaceous, as before, wispy calcite fractures	
44		148.6	148.78	.18	.17		As Above	3cm of wispy calcite veins @ top	
44/45	76°	148.78	151.59	2.81	2.73	151.49	Mudstone	siltstone, mudstone interbeds range from 20 - 50cm thick, mudstone is carbonaceous as above, shot through with wispy calcite veins; siltstone interbeds vary from 10 - 30 cm thick, they are well laminated, light grey, rootlets, occasional cross-laminations, calcite veins parallel to bedding, occasional carbonaceous laminated and polished carbonaceous partings, rare sandy interlaminations	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
45/46	80°	151.59	152.7	1.11	1.09		As Above	abundant wispy calcite veining @ bottom	
46		152.7	153.14	.44	.43		Coal	dull lustrous, thin bright bands & interlaminations, muddy lenses, occasional 1 cm thick bright bands @ base, hard, broken @ top	
		153.14	153.3	.26	.26		Lost Coal		
46		153.3	153.64	.34	.33		Mudstone	carbonaceous, broken @ top, numerous calcite veins sub-parallel to bedding throughout, polished surfaces	
		153.64	154.1	.46	.45		Lost Mdst Core		VIT #41 PALY #42
46	75°	154.1	154.17	.07	.07		Coal	broken, dull lustrous with 1cm thick bright bands, mudstone bands 0.5cm thick	
46		154.17	154.26	.09	.09		Coal	dull lustrous, occasional very thin bright bands	
46		154.26	154.32	.06	.06		Coal	dull lustrous	
		154.32	154.8	.48	.46		Lost Coal Core		
46/47		154.8	155.7	.90	.87		Mudstone	carbonaceous, coaly interlaminations in top 5cm, dark grey, irregular fracture, carbonaceous plant fragments, becomes less carbonaceous towards base, some slightly polished surfaces, wispy calcite veins in bottom 10cm	
47	70°	155.7	157.61	1.91	1.79	157.58	Mudstone/ Siltstone	regular interbeds about 20 - 30 cm thick, mudstone is medium grey but can be dark grey and carbonaceous, mudstone is bioturbated with occasional faint laminae & abundant wispy calcite veins; siltstone is light grey, well laminated, rootlets, carbonaceous partings, ball & pillow structures, some horizons are bioturbated, calcareous	
47/48		157.61	158.84	1.23	1.16		As Above	grades downwards to a mudstone	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
48		158.84	160.71	1.87	1.76	160.63	Mudstone	dark grey, homogenous, some carbonaceous plant fragments, irregular fracture, 1.21 - 1.40 m there are calcite filled fractures with no particular orientation, 1cm coal lens near base, some carbonaceous partings near base,	
48		160.71	161.25	.54	.51		As Above	calcareous	
		161.25	161.45	.20	.19		Lost Core	mudstone	
		161.45	161.52	.07	.07		Lost Core	Coal	
49		161.52	161.75	.23	.22		Coal	dull lustrous with bright bands, highly broken	
		161.75	161.80	.05	.05		Lost Core	coal	
		161.80	162.26	.46	.43		Lost Core	mudstone, and coaly partings	
		162.26	162.28	.02	.02		Lost Core	coal	
49		162.28	162.69	.41	.39		Coal	dull hard, muddy, bright coal stringers, polished surfaces	
49		162.69	162.82	.13	.12		Coal	bright with a few dull bands, good cleat	
		162.82	162.95	.13	.12		Lost Core	mudstone	
		162.95	162.98	.03	.03		Lost Core	coal	
49		162.98	163.10	.12	.11		Coal	dull with bright coal stringers	
49		163.10	163.17	.07	.07		Coal	bright & dull, polished surfaces	Bulk 45
		163.17	163.31	.14	.13		Lost Core	mudstone	
		163.31	163.40	.09	.09		Lost core	coal	
49		163.40	163.42	.02	.02		Coal	powdered bright	VIT
49		163.42	163.50	.08	.08		Coal	dull with bright bands, sheared at base	PALY 44
49		163.50	163.86	.36	.34	163.68	Mudstone	dark grey, very carbonaceous, bright coal stringers and bands particularly at base, polished carbonaceous surface, broken at base	
49		163.86	163.90	.04	.04		Lost Core	coal	
49		163.90	164.08	.18	.17		Coal	dull with bright bands, hard, polished surfaces	
49		164.08	164.14	.06	.05		Coal	dull lustrion	
		164.14	164.28	.14	.13		Lost Core	mudstone	
		164.28	164.55	.27	.35		Coal	dull lustrous, hard	
49		164.55	164.72	.17	.16		Coal	bright & crisp, good cleat, occasional dull lustrous interbeds	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
49									
49		164.72	165.06	.34	.32		Mudstone	carbonaceous, bright coal stringers, dark grey, silty interbeds in bottom half	
		165.06	165.10	.04	.03		Lost Core		
49		165.10	165.24	.14	.13		Coal	dull lustrous with grainy texture	
		165.24	165.36	.12	.11		Lost Core	mudstone	
49/50		165.36	165.56	.20	.19		Coal	mostly dull lustrous with bright bands	
50		165.56	165.69	.13	.12		Mudstone	very carbonaceous with bright coal stringers and bands, carbonaceous plant fragments, very hard	
		165.69	166.01	.32	.25		Coal	dull lustrous with bright bands	
		166.01	166.03	.02	.02		Lost Coal		
		166.03	166.53	.50	.47		Mudstone	dark grey, carbonaceous, abundant carbonaceous parting, slightly polished, silty towards the base	
		166.53	166.91	.38	.36		Lost Core		
50		166.91	167.1	.19	.18	166.73	Mudstone	silty, medium grey, very fine grained light grey sandstone interbeds, abundant rootlets, "SEAT EARTH", a few carbonaceous plant fragments	
50/51		167.1	169.7	2.6	2.44		As Above	sandstone interbeds comprise 40% of silty mudstone, some carbonaceous partings, abundant rootlets, calcite filled fractures, sandstone laminations are disturbed, laminated, occasional bright coal lenses, muddy towards base, carbonaceous slickensided partings, burrow, bioturbation, calcareous, calcite crystals on fracture surfaces	
51		169.7	170.14	.44	.41	169.98	Mudstone	carbonaceous, occasional bright coal stringers, polished carbonaceous surfaces, greyish black, silty at top, calcite veining (minor) in top 10cm	
51/52		170.14	173.05	2.91	2.73	172.82	Mudstone	carbonaceous, as above	
52/53		173.05	175.69	2.64	2.48	175.87	As Above	broken & rubbly in middle	
53		175.69	175.96	.27	.25		Mudstone	carbonaceous, as above	

box No.	bCA (°)	Depth From	Depth To	App. Thick-ness (m)	True Thick-ness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
53		175.96	176.12	.16	.15		Mudstone Breccia	square to round clasts, calcite matrix, vugs	
53		176.12	176.2	.08	.08		Mudstone	carbonaceous, as before	
		176.2	176.4	.2	.19		Lost Core		
53		176.4	176.6	.2	.19		Mudstone/Coal	mudstone - very carbonaceous & dark grey, abundant plant fragments, broken, {coal; is bright and thin and discontinuous} broken	
53		176.6	176.75	.15	.14		Coal	dull lustrous, dirty or muddy, bright bands, some slickensides, less muddy at bottom	
53		176.75	177.1	.35	.33		Mudstone	very carbonaceous, greyish black, bright coal interlaminations + stringers, polished surfaces, sheared and powder 10 - 20cm from top, abundant carbonaceous plant fragments	
53/54		177.1	177.39	.29	.27		Mudstone/Coal	interbedded; coal is bright and crisp, coal bands .5 - 1 cm thick/mudstone is carbonaceous	
54		177.39	178.52	1.13	1.06	178.92	Carbonaceous Mudstone	greyish black, bright coal bands, abundant carbonaceous polished partings, carbonaceous plant fragments near base	
54		178.52	179.62	1.10	1.03		Carbonaceous Mudstone	as above, numerous bright coal lenses and stringers	
		179.62	179.94	.30	.28		Lost Coal		
54/55		179.94	180.97	1.03	.97		Carbonaceous Mudstone	greyish black, silty, towards base, very few bright coal stringers, mottled (bottom 30cm), abundant carbonaceous plant fragments	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
55		180.97	181.55	.58	.55	181.97	Silty Mudstone	medium dark grey, occasional sandstone (very fine grained light grey) interbeds, abundant rootlets, occasional carbonaceous plant fragments	
55/56	67°	181.55	184.58	3.03	2.79	185.02	Silty Mudstone	as above, sandstone interbeds have distorted laminations, burrows, wispy calcite veins subparallel to bedding, mudstone becomes more carbonaceous and less silty at base, occasional carbonaceous plant fragments	
56		184.58	186.16	1.58	1.45		Silty Mudstone	as above	
56/57		186.16	188.58	2.42	2.23	188.06	Mudstone	top 1m is silty, the rest is carbonaceous, greyish black, occasional bright coal lenses, 2 calcite filled fractures sub parallel to bedding, carbonaceous plant fragments	
57		188.58	189.4	.82	.75		Mudstone	as above, abrupt lower contact	
57/58		189.4	191.01	1.61	1.48		Sandstone	with silty laminations, occasional mudstone & carbonaceous laminations, burrows & rootlets near top, ripples @ base, light grey, calcareous	
58	75°	191.01	191.51	.50	.48	191.11	Siltstone/ Mudstone	interbeds, 20 - 30cm thick interbeds, siltstone: - laminated, cross-laminated, bioturbated, rootlets, light grey, mudstone: - medium dark grey, burrowed & bioturbated - occasional wispy horizontal calcite veinlets	
58/59		191.51	193.21	1.70	1.64		As Above	one sandy interbed near base	
59		193.21	194.46	1.25	1.21	194.16	Mudstone	with sandstone & siltstone interlaminations, interlaminations are spaced regularly at about 5cm apart giving core a banded appearance, burrows in the mudstone interbeds, cross-laminations and ripples in sandstone & siltstone interlaminations	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
59/60	78°	194.46	195.96	1.50	1.47		Mudstone	bottom 0.70m has much less siltstone and sandstone, as above	
60		195.96	197.09	1.13	1.11	197.21	Mudstone	medium dark grey, one siltstone interbed in middle, occasional coal lenses, some carbonaceous plant fragments, very homogenous, one clean vertical joint, calcareous	
60/61		197.09	199.74	2.65	2.59	199.65	Mudstone	as above, laminated siltstone interbed @ top	
61/62		199.74	201.0	1.26	1.23		Mudstone	as above, bottom 0.25m is very carbonaceous	
62		201.0	201.18	.18	.18		Mudstone/Coal	coal bands up to 0.5cm and abundant laminations	
62		201.18	201.24	.06	.06		Mudstone	very carbonaceous, polished surfaces, abundant plant fragments, very broken	
62		201.24	201.27	.03	.03		Pyrite	very broken	
62		201.27	201.32	.05	.05		Mudstone	carbonaceous, as before	
62		201.32	201.88	.56	.55		Mudstone	dark grey, occasional coal bands, 10cm siltstone interbeds near top, slightly calcareous	
62		201.88	201.98	.10	.10		Coal/Mudstone	bright and crisp coal bands up to 3cm thick, dull lustrous bands (60:40), mudstone is carbonaceous and greyish black	
62		201.98	202.24	.26	.25	202.69	Mudstone	as before, carbonaceous, carbonaceous plant fragments, greyish black	
62/63		202.24	205.08	2.84	2.78	205.90	Mudstone	as above, coal lenses and interlaminations (especially in top 90cm where it is also broken), occasional carbonaceous plant fragments, monotonous	
63		205.08	205.9	.82	.80		Mudstone	as above, wispy calcite horizon near bottom	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
		205.9	206.61	.71	.69		Mudstone	very carbonaceous, [bright coal lenses, stringers and interlaminations] polished surfaces, slickensides	
		206.61	207.27	.66	.65		Lost Core		
64	75°	207.27	208.74	1.47	1.42	209.10	Siltstone	medium grey, [sandstone and siltstone laminations], occasional rootlets, rare burrows, carbonaceous plant fragments, rare coal stringers, mudstone band @ .5m - .65m from top, sandy from .9m - 1.0m	
64/65	70°	208.74	211.03	3.09	2.90	212.3	Siltstone	as above, mudstone interbed from .86 - 1.22m from top, rare coal stringers, ripples, carbonaceous laminae, rare burrows	
65/66	73°	211.83	214.87	3.04	2.91	215.3	Siltstone	medium grey, sandstone and mudstone and carbonaceous laminations, rare coal stringers, cross-laminations, bioturbation especially in muddy interbeds, mudstone interbed for top 40cm, lower half is more homogeneous with only rare laminations	
		214.87	215.47	.60	.57		Lost Core		
66/67	70°	215.47	217.23	1.76	1.65		Sandstone	medium light grey, numerous carbonaceous mudstone and siltstone laminations, coal stringers, well developed burrows, cross-bedding, cross-laminations, calcite veins subparallel to bedding, occasional muddy and silty interbeds up to 10cm thick, occasional slickensides parallel to bedding	
67/68		217.23	218.53	1.3	1.22		Siltstone	medium grey, mudstone, sandstone and carbonaceous interlaminations, contorted laminations, rootlets, burrows, bioturbated especially in muddy interbeds, polished surfaces, rare wispy calcite veins subparallel to bedding, rare coal stringers	
68		218.53	220.33	1.8	1.69		Siltstone	as above, occasional sandstone intervals, very large burrows (6cm x 2cm), contorted laminations, rootlets, occasional wispy calcite veins, rare coal stringers, sharp lower contact	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
68/69		220.33	221.66	1.33	1.25	221.59	Sandstone	light grey, fine to very fine grained, mudstone siltstone and carbonaceous interlaminations, contorted laminations, abundant coal stringers, occasional mudstone clasts, "scour & fill" (especially in top .45m) .45 - .52 - mudstone band	
69	70°	221.66	221.8	.14	.13		Sandstone	as above, sharp lower contact	
69		221.8	223.1	1.3	1.22		Mudstone	very carbonaceous, abundant coal stringers and interlaminations, polished surfaces, broken, occasional powdered bright coal band, highly broken and coaly from .85 - 1.1m from top, grades to siltstone at base	
		223.1	223.3	.2	.19		Lost Core		
69/70	70°	223.3	224.27	.97	.91	224.64	Siltstone	muddy, mudstone and carbonaceous laminations, coal stringers, polished surfaces occasional sandstone laminations, occasional burrows, ripples	
		224.27	224.6	.33	.31		Lost Core		
70	73°	224.6	226.54	1.94	1.86		Siltstone	numerous sandstone and mudstone laminations, burrows, ripples, cross laminations, rootlets, sandier than above unit, rare coal stringers, becomes muddy towards base, top 10cm is mudstone	
70/71		226.54	227.42	.88	.84		Mudstone	dark grey, monotonous, plant fragments, homogenous	
		227.42	228.0	.58	.55		Lost Core		
71	75°	228.0	228.28	.28	.27	227.08	Mudstone	silty, well laminated, bioturbations, rare coal stringers, plant fragments	
71		228.28	228.89	.61	.59		Mudstone	silty, as above	
71	90°	228.89	229.89	1.0	1.0	228.60	Siltstone	sandstone and mudstone interlaminations, coal stringers (rare), plant fragments throughout, burrows, bioturbation, ripples in sandstone laminations	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
				.48	.48		Lost Core		
71		232.37	232.65	.28	.28		Siltstone	as above, very fine grained sandstone at base, laminated, broken at top	
71/72	85°	232.65	233.35	.7	.7		Mudstone	medium grey, faintly laminated, wispy calcite veining at base, plant fragments, rare coal stringers	
72	80°	233.35	233.6	.25	.25	230.74	Siltstone	mudstone and sandstone interlaminations, small burrows, faintly laminated, muddy and homogenous at base with no laminations, contort laminations at top, plant fragments	
72		233.6	234.80	1.2	1.18		Siltstone	as above	
72		234.80	234.95	.15	.15		Coal	dull with bright bands	
72		234.95	234.96	.01	.01		Coaly Mudstone		
72		234.96	234.99	.03	.03		Coal	bright and crisp, hard	
72	[77°]	234.99	235.04	.05	.05		Coaly Mudstone	with bright bands, hard	
72		235.04	235.09	.05	.05		Coal	dull with bright bands	
72		235.09	235.33	.24	.23		Coaly Mudstone		
72	75°	235.33	235.61	.28	.27		Mudstone	siltstone laminations, wispy calcite veining at base, pyrite, broken at base	
72		235.61	235.70	.09	.09		Stoney Coal	(ie. muddy with brown steak) with 1mm thick bright coal stringers	
72/73		235.70	235.77	.07	.07		Coaly Mudstone	with bright coal interlaminations	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
73		235.77	236.29	.52	.50	233.78	Mudstone	medium grey, faint laminations, bioturbation, rare plant fragments	
73	[77°]	236.29	236.92	.63	.61		Siltstone	medium grey, burrows, soft sediment deformation, mud clasts, contorted laminae, carb plant fragments	
73/74	80°	236.92	238.74	1.82	1.79		Mudstone	medium dark grey, siltstone laminations, silty at top, contorted at top, carbonaceous partings, small burrows, sandstone interbed 1.66 - 1.7m from top	
74	85°	238.74	239.45	.71	.71	236.83	Mudstone	dark grey, rare carbonaceous plant fragments, monotonous, irregular fracture, faint laminations and silty bioturbation at base	
74		239.45	239.73	.28	.28				
74		239.73	239.89	.16	.16		Coal	dull, rare bright bands	
74		239.89	239.92	.03	.03		Coal	bright	
74		239.92	240.09	.17	.17		Coaly Mudstone	bright coal bands and interlaminations	
74		240.09	240.13	.04	.04		Coal	bright	
74		240.13	240.38	.25	.25		Lost Coaly Mdst		
74		240.38	240.43	.05	.05		Coal	dull with bright stringers	
74	[80°]	240.43	241.15	.72	.71		Mudstone	carbonaceous, occasional coal stringers dark grey, bright powdered coal bands, gradational lower contact	
74/75		241.15	242.54	1.39	1.37	239.88	Siltstone	medium grey, mudstone and sandstone laminations, cross laminations, contorted bedding, ripples, plant fragments, calcareous coal stringers	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
75		242.54	243.06	.52	.51		Siltstone	as above, some bioturbation	
		243.06	243.23	.17	.17		Lost Core		
75		243.23	243.82	1.59	1.57		Mudstone	medium dark grey, faint silty laminations near base, carbonaceous plant fragments, monotonous, sharp contact at base with sandy siltstone	
75/76	77°	244.82	244.91	.9	.88	242.93	Sandy Siltstone	medium grey, abundant laminations, cross laminations, ripples, burrow (4c .5cm)	
76	80°	244.91	246.74	1.83	1.80		Siltstone	well laminated, sandstone and mudstone laminations, ripples, rootlets, bioturbation, gradational at base	
76/77		246.74	247.29	.55	.54		Mudstone	dark grey, irregular fracture, homogenous	
77		247.29	247.41	.12	.12		Coal	dull with bright bands, hard, broken	
		247.41	247.54	.13	.13		Lost Coal		
77	85°	247.54	247.87	.33	.33	245.98	Mudstone	faintly laminated, coal stringers, plant fragments	
77/78	75°	247.87	249.99	2.12	2.05		Mudstone	as above, bioturbation, silty laminations, burrows, wispy to heavy calcite veining in middle for 10cm, coal stringers, polished surfaces, carbonaceous, coaly mudstone at base, broken at base	
77		249.99	250.03	.04	.04		Coal	dull lustrous with bright bands, broken	
78		250.03	250.30	.27	.26		Coaly Mudstone	very carbonaceous, coal stringers, fusain stringers, broken and powdered	
78		250.30	250.56	.26	.25	249.02	Mudstone	medium dark grey, silty in middle, bioturbated, carbonaceous, coal stringers, polished surfaces	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
78/78A	75°	250.56	253.31	2.75	2.66		Mudstone	medium dark grey, as above, silty laminations, bioturbated, some small ripple horizons, carbonaceous plant fragments, coal stringers, near vertical calcite filled joints, siltier at base with burrows	
78A		253.31	253.63	.32	.31	252.07	Siltstone	muddy, bioturbated, sandstone and mudstone interlaminations, plant fragments, coal stringers, burrows, contorted bedding, ripples, medium grey, polished surfaces, rare wispy calcite veins	
78A/79	80°	253.63	256.77	3.08	3.03	255.12	Siltstone	as above, thick calcite vein 5cm @ 1.95m from top, sandier at base with less bioturbation, more distinct laminations at base	
79		256.77	256.96	.25	.25		Siltstone	as above, bioturbated, ripples, sharp contact at base	
79		256.96	257.69	.73	.72		Mudstone	dark grey, slightly silty at top, grades to greyish black at base, irregular fracture	
79		257.69	257.80	.11	.11		Coaly Mudstone	very coaly, coal interlaminations and bright bands, polished surfaces, badly broken	
79		257.80	257.92	.12	.12		Coal	dull with bright band	
79		257.92	257.95	.03	.03		Coal	stoney	
79		257.95	258.11	.16	.16		Coaly Mudstone	very carbonaceous, coal stringers, polished surfaces	
		258.11	259.19	1.08	1.04		Lost Core		
79/80	75°	259.19	260.43	1.24	1.20	258.17	Siltstone	occasionally muddy, faint laminations, sandstone and mudstone laminations, bioturbated carbonaceous plant fragments, coal stringers, mudstone from .2 - .5m, polished surfaces	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
80	85°	260.43	260.76	.33	.33		Siltstone	as above, rootlets, bioturbated, faint laminations, sharp lower contact	
80	80°	260.76	261.45	.69	.68		Sandstone	medium light grey, ripples, burrows, cross laminations, carbonaceous plant fragments	
80	90°	261.45	261.77	.32	.32		Siltstone	sandy at top, muddy at bottom, gradational between sandstone above and mudstone below, faintly laminated dark grey, irregular fracture, homogenous, broken at base	
80		261.77	261.99	.22	.22		Mudstone		
80		261.99	262.01	.02	.02		Lose Core-Coal		
80		262.01	262.05	.04	.04		Coal	dull lustrous, with bright bands up to 2cm thick	
80		262.05	262.06	.01	.01		Calcite Veinlet		
80		262.06	262.14	.08	.08		Coal	stoney with bright bands up to 1cm thick and interlaminations, polished surfaces, calcite veinlets	
80		262.14	262.24	.10	.10		Carbonaceous Mudstone	greyish black, polished surfaces, with bright coal inter-laminations, very broken	
		262.24	262.53	.29	.29		Lost Core		
80		262.53	262.76	.23	.23		Mudstone	dark grey, broken at top, carbonaceous and coaly at top, irregular fractures, some coaly plant fragments	
81		262.76	263.40	.64	.64	261.22	Siltstone/ Mudstone	with 10cm thick very fine grained light grey sandstone interbeds mudstones are as above, siltstones have rootlets, distinct laminations, muddy interlaminations, and bioturbation	
81	[85°]	263.40	265.39	1.99	1.98		Mudstone	slightly silty in places, dark grey, irregular fracture, carbonaceous plant fragments, occasional horizontal wispy calcite veins, bioturbations, monotonous	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
81/82		265.39	266.45	1.06	1.06	264.26	Muddy Siltstone	sharp upper contact, sandy at top, 20cm thick mudstone interbed near top, middle is laminated and cross-laminated with rootlets, bottom is bioturbated with burrows, occasional coal stringers	
		266.45	267.82	1.37	1.36		Siltstone	as above, very bioturbated, wispy calcite veins near base, occasional carbonaceous plant fragments	
82/83	80°	267.82	269.09	1.27	1.25		Mudstone	dark grey, irregular fracture, abundant carbonaceous plant fragments, wispy calcite veins, monotonous, occasional coaly stringers, carbonaceous towards base, coal lenses at base	
83		269.09	269.15	.06	.06		Coal	dull lustrous with bright bands, hard with good cleat	
		269.15	269.47	.32	.32		Core Loss-Coal		
83		269.47	269.52	.05	.05		Mudstone	bright coal interlaminations, greyish black	
83		269.52	269.61	.09	.09		Coal	bright banded, polished surfaces, good cleat, hard, extremely broken	
83		269.61	269.63	.02	.02	267.31	Coal	dull and bright	
83		269.63	269.66	.03	.03		Coal	dull and bright	
83		269.66	269.73	.07	.07		Carbonaceous Mudstone/Coal	coal interlaminations and 2cm thick bright bands	
83		269.73	269.80	.07	.07		Carbonaceous Mudstone	with thin (mm scale) bright bands, wispy calcite veins	
		269.80	269.87	.07	.07		Lost Core		
83		269.87	270.30	.43	.42		Carbonaceous Mudstone	very broken at top and bottom, greyish black, coaly stringers, lenses and laminations, wispy calcite veining near top, very coaly in middle with bright bands up to 1cm	

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
83		270.30	271.29	0.99	.97		Mudstone	sandstone interbed from .08 to .23, light grey very fine grained laminated mudstone, dark grey, coaly lenses at top and bottom, bottom half is bioturbated, wispy calcite veins, abundant carbonaceous plant fragments	
83		271.29	271.37	.08	.08		Coal	dull and bright, bright bands up to .5cm thick	
83		271.37	271.41	.04	.04		Coal	bright banded	
83		271.41	271.45	.04	.04		Mudstone	carbonaceous with coal stringers and interlaminations	
83		271.45	271.47	.02	.02		Coal	dull and bright, polished surfaces	
		271.47	271.62	.15			Coal Loss		
84		271.62	271.66	.04	.04		Mudstone	carbonaceous, coaly laminations and thin coal bands	
84		271.66	271.73	.07	.02		Coal	dull lustrous with bright bands	
84		271.73	271.79	.06	.06		Coal	bright banded, hard with good cleat	
84		271.79	271.94	.15	.15		Coal	boney	
84		271.94	272.35	.41	.40		Mudstone	very carbonaceous, mm thick coal bands throughout	
84		272.35	272.61	.26	.26	270.36	Mudstone	dark grey, hard, carbonaceous plant fragments, very homogenous, conchoidal fractures	
84		272.61	274.04	1.43	1.44		Mudstone	as above, slightly silty in places	
		274.04	274.64	.60	.59		Lost Coal		
84		274.64	274.71	.07	.07		Mudstone/Coal	thin interlaminations, very broken, polished surfaces	
		274.64	274.71						

Box No.	BCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
84/85		274.71	275.27	.56	.55		Mudstone	medium dark grey, wispy calcite veinlets at top, irregular fracture, carbonaceous plant fragments	
85		275.27	275.66	.39	.38	273.41	Muddy Siltstone	laminated, rootlets, burrows, medium grey, rare plant fragments	
85		275.66	275.73	.07	.07		Muddy Siltstone	as above	
		275.73	275.85	.12	.12		Lost Core		
85		275.85	276.84	.99	.97		Mudstone	dark grey, homogenous, irregular fracture occasional plant fragments	
85		276.84	276.89	.05	.05		Coaly Mudstone	bright coal interlaminations	
85		276.89	276.94	.05	.05		Coal	dull with bright bands, hard	
85		276.94	277.09	.15	.15		Coal	dull-muddy	
85		277.09	277.18	.09	.09		Coal	dull with bright bands	
		277.18	277.36	.18	.18		Lost Core Coal		
85		277.36	277.64	.28	.28		Mudstone	very carbonaceous, coal lenses, coaly interlamination	
85/86	80°	277.64	278.58	.94	.93	276.46	Siltstone	sandy at top, light grey, rootlets at top, faint laminations	
86/87		278.58	281.19	2.61	2.56		Siltstone	top 10cm is muddy, medium grey, .10 - 1.28 muddy homogenous, 1.28 - 1.84 well laminated with rootlets, 1.84 - 2.09 - mudstone interbed, bottom well laminated, gradational lower contact	
87		281.19	283.35	2.16	2.13		Mudstone	medium grey, some silty horizons and laminations, occasional carbonaceous plant fragments irregular fracture	
		283.35	283.54	.19	.19		Lost Core		

Box No.	BCA (°)	Depth From To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	Amplified (Include Coal Recovery for Each Seam)	Sample No.
87		283.54-283.56	.02	.02		Coal	dull lustrous	
		283.56-283.66	.10	.10		Lost Coal Core		
87		283.66-283.73	.07	.07		Coal	bright banded, good cleat, hard	
87		283.73-283.83	.10	.10		Coal	dull lustrous bright bands up to .5cm thick	
87		283.83-283.89	.06	.06		coal	dull-hard	
87	-	283.89-283.96	.07	.07		Coaly Mudstone	calcite vein	
87-88	[75°]	283.96-284.25	.29	.28		Mudstone		
		284.25-284.40	.15	.15		Lost Core		
88		284.40-284.48	.08	.08		Coal	bright banded	
88		284.48-284.60	.12	.12			dull lustrous	
88		284.60-284.70	.10	.10	282.55	Coal	dull banded	
88		284.70-286.16	1.46	1.41		Mudstone	silty horizons, medium grey, bottom 40cm has coal bands and is carbonaceous, irregular fracture, homogenous, some carbonaceous plant fragments	
88/89	70°	286.16-287.62	1.46	1.37	285.60	Siltstone	laminated, rootlets, mudstone laminations, medium grey, muddy in middle	
89		287.62-287.77	.15	.14		Coal	dull lustrous with bright bands	
89		287.77-289.68	1.91	1.79		Siltstone	muddy, mudstone interbed in middle, top 10cm is polished, carbonaceous mudstone, top 3/4 is faintly laminated, bioturbated, rootlets, bottom is well laminated, carbonaceous partings cross-laminated slightly sandy, coaly stringers, medium grey, muddy at top, sandy at base	

Box No.	bCA (°)	Depth From	Depth To	App. Thickness (m)	True Thickness (m)	Marker Block (m)	LITHOLOGIC DESCRIPTION MAIN	LITHOLOGIC DESCRIPTION Amplified (Include Coal Recovery for Each Seam)	Sample No.
90	80°	289.68	290.82	1.14	1.12	289.26	Sandstone	fine grained, laminated, cross-laminated, salt and pepper, "Dresser type sandstone", medium light grey, calcite crystals on joint planes	
		289.68	290.82				END OF HOLE		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY Falling Creek

NTS LOCATION 93O/P

DRILL HOLE OR OUTCROP NUMBER A033

SEAM NAME "long John" jw

LOCATION E 60041/N40467

FORMATION

ELEVATION 1351

COMMENTS

ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST J. Horgan

DATE 19/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		
	200		
	300		sst
	400		
	500		
	600		
	700		
	800		
	900		
	1000		
	1100		
	1200		
	1300		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY: FALLING CREEK

NTS LOCATION: 930/P

DRILL HOLE OR OUTCROP NUMBER: B021

SEAM NAME:

LOCATION: E61198/N 41135

FORMATION:

ELEVATION: 1170

COMMENTS:

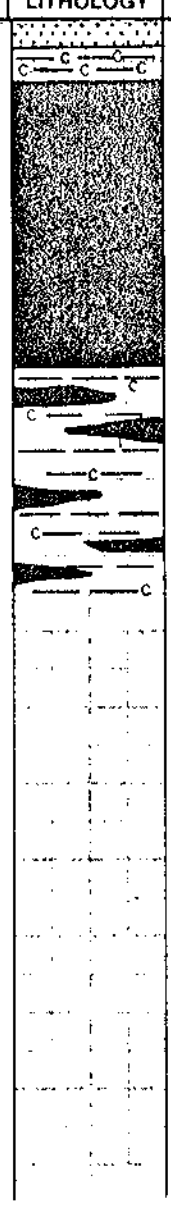
ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST: BRENDA

DATE: 14/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY									
	20										Bright Bands
	100										V. carb coal stringers
	200										

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B023

SEAM NAME

LOCATION E61195/N 41425

FORMATION

ELEVATION 1168

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 14/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		Bright banded V. friable
	200		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B024

SEAM NAME

LOCATION E61130/N 41500

FORMATION

ELEVATION 1173

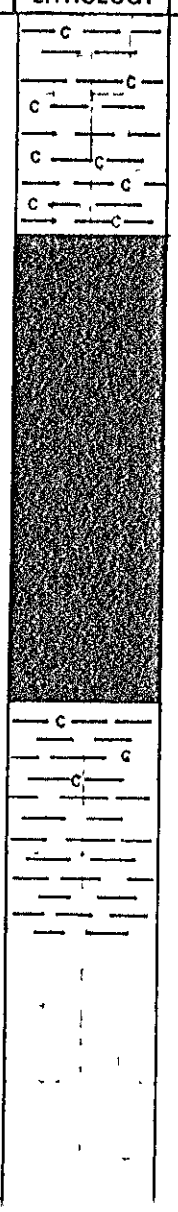
COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 14/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY									
	20										Mostly bright sideritic
	100										
	200										

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PR: Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK CLIFF

NTS LOCATION 930/P

DRILL HOLE OR OUTCROP NUMBER B036

SEAM NAME

LOCATION E60630/N 42157

FORMATION

ELEVATION 1177

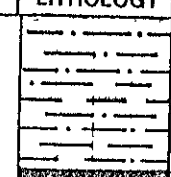
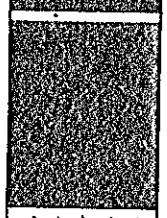
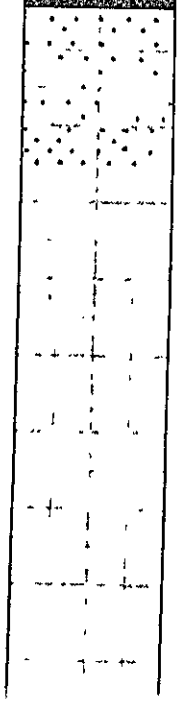
COMMENTS

ORIGIN OF LOG. CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST BRENDA DATE 23/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
			Bright cw dull bands
			= sst split
	100		
			bright cw dull bands
	200		

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PR- Falling Creek 81/(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY: FALLING CREEK

NTS LOCATION: 930/P

DRILL HOLE OR OUTCROP NUMBER: B045

SEAM NAME: BRENDA

LOCATION: E60766/N 42373

FORMATION:

ELEVATION: 1141

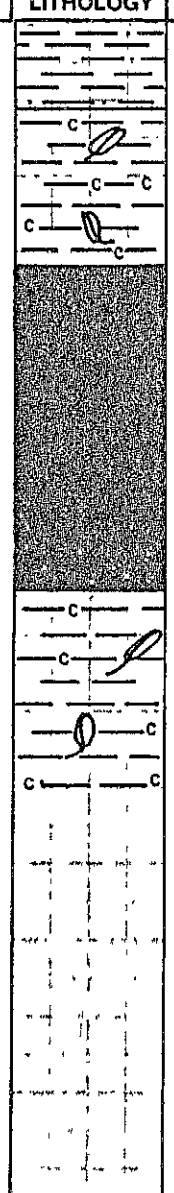
COMMENTS:

ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST ____ DATE 24/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		carb Plant frags. v. dirty and muddy carb plant frags.
	100		
	200		

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PR-Falling Creek 8(13)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK **NTS LOCATION** 93O/P **DRILL HOLE OR OUTCROP NUMBER** B048

SEAM NAME BRENDA **LOCATION** E60320/N 42328

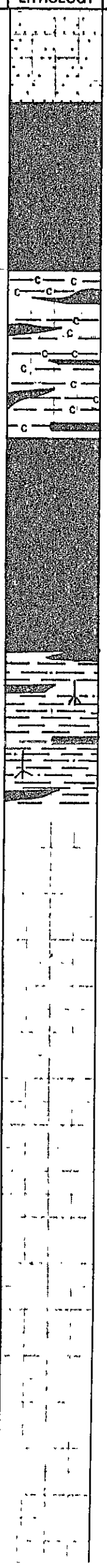
FORMATION **ELEVATION** 1188

COMMENTS **ORIGIN OF LOG:** **CORE** **CHIP SAMPLES**

GEOPHYSICAL LOG **OUTCROP**

GEOLOGIST BRENDA **DATE** 24/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY										
	20											Bright Dull Dull $\overline{cw}$ Bright bands Rootlets
	1000											
	200											
	300											

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B059

SEAM NAME _____ LOCATION E59709/N 44234

FORMATION _____ ELEVATION 1201

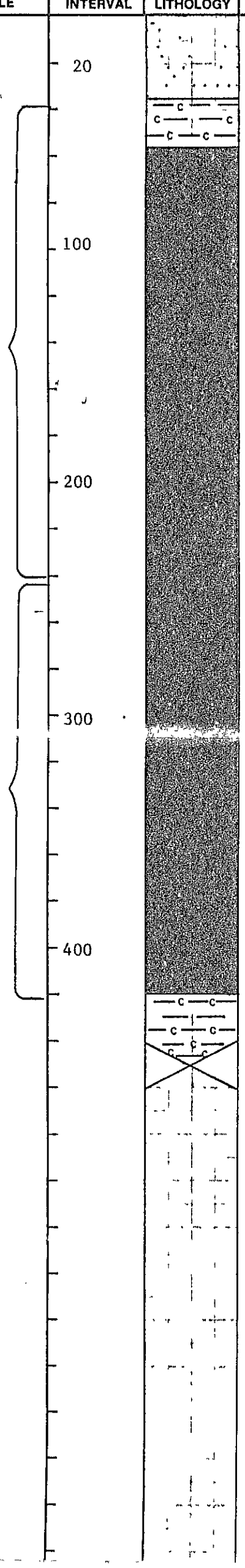
COMMENTS _____ ORIGIN OF LOG: CORE _____ CHIP SAMPLES _____

GEOPHYSICAL LOG _____ OUTCROP _____

GEOLOGIST BRENDA DATE 2/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY



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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY Falling Creek FALLING CREEK

NTS LOCATION 930/P

DRILL HOLE OR OUTCROP NUMBER B049

SEAM NAME Brenda BRENDA

LOCATION E 60309/N 42302

FORMATION

ELEVATION 1193

COMMENTS

ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST Brenda

DATE 24/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		dull powdery
			bentonite band
	100		dull and brightly banded
	200		powdery in places
	300		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B062

SEAM NAME

LOCATION E59466/N44255

FORMATION

ELEVATION 1176

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 27/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY
	20	
	100	
	200	
	300	
	400	

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING/~~CREEK~~NG CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B073

SEAM NAME _____ LOCATION E59136/N 44055

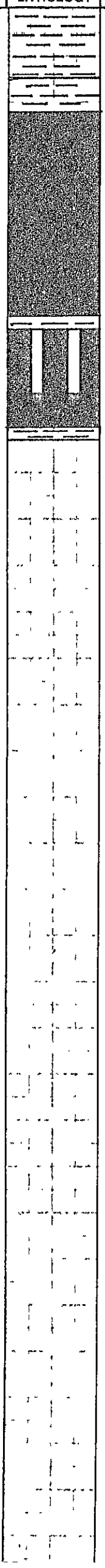
FORMATION _____ ELEVATION 1190

COMMENTS _____ ORIGIN OF LOG: CORE _____ CHIP SAMPLES _____

GEOPHYSICAL LOG _____ OUTCROP _____

GEOLOGIST BRENDA DATE 30/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		mdst grad. to coal
	100		Dull banded
			Carb, mdst split
			V. coaly most
	200		

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ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY Falling Creek LFFK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B083

SEAM NAME _____ LOCATION E 59089/N 43940

FORMATION _____ ELEVATION 1188

COMMENTS _____ ORIGIN OF LOG: CORE _____ CHIP SAMPLES _____

GEOPHYSICAL LOG _____ OUTCROP _____

GEOLOGIST Brenda DATE 1/7/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		bright-crisp shaley bands
	200		sideritic nodules

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK CREEK

NTS LOCATION 930/P

DRILL HOLE OR OUTCROP NUMBER B119

SEAM NAME

LOCATION E58770/N 43765

FORMATION

ELEVATION 1160

COMMENTS

ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST BRENDA DATE 19/7/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY											
	20		may not be in place = in washed out gully										
	100												
	200												

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B121

SEAM NAME

LOCATION E58810/N 43845

FORMATION

ELEVATION 1155

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 19/7/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY												
	20													sst??
	100													
	200													
	300													

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B122

SEAM NAME BRENDA ??? LOCATION E58810/N 43865

FORMATION ELEVATION 1155

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 19/7/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY
	20	
	100	
	200	
	300	

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FILL/FALLING CREEK

NTS LOCATION 930/P

DRILL HOLE OR OUTCROP NUMBER B204

SEAM NAME SEVEN SISTERS

LOCATION E59215/N 44780

FORMATION

ELEVATION 1140

COMMENTS

ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST BRENDA

DATE 13/8/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		Dull
	100		Bright bands
	200		Dull
	300		Bright bands
	400		Obscured
	500		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B205

SEAM NAME SEVEN SISTERS LOCATION E59220/N 44790

FORMATION ELEVATION 1140

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 13/8/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		covered
	100		carb plt. frags.
	200 300		Dull few bright bands
	400		

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PR-Falling Creek 81(3) A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK **NTS LOCATION** 93O/P **DRILL HOLE OR OUTCROP NUMBER** B206

SEAM NAME SEVEN SISTERS **LOCATION** E59215/N 44780

FORMATION **ELEVATION** 1140

COMMENTS **ORIGIN OF LOG:** **CORE** **CHIP SAMPLES** ✓

GEOPHYSICAL LOG **OUTCROP**

GEOLOGIST BRENDA **DATE** 13/8/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		fgr. V. carb plt. frgs.
	100		
	200		dull $\overline{cw}$ bright bands
	300		V. carb plt. frags.

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK FK

NTS LOCATION 930/P

DRILL HOLE OR OUTCROP NUMBER B207

SEAM NAME SEVEN SISTERS

LOCATION E59220/N 44810

FORMATION

ELEVATION 1140

COMMENTS

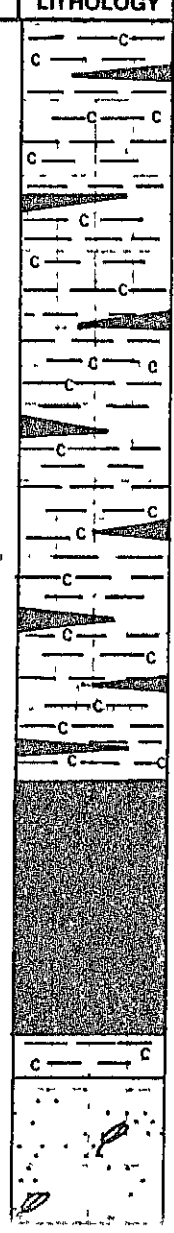
ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST BRENDA

DATE 13/8/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		
	200		
	300		V. carb rootlets and plant frgs. Numerous

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY: FALLING CREEK (Falling Creek)

NTS LOCATION:

DRILL HOLE OR OUTCROP NUMBER: B208

SEAM NAME: SEVEN SISTERS (Seven Sisters)

LOCATION: E59225/N 44815

FORMATION:

ELEVATION: 1140

COMMENTS:

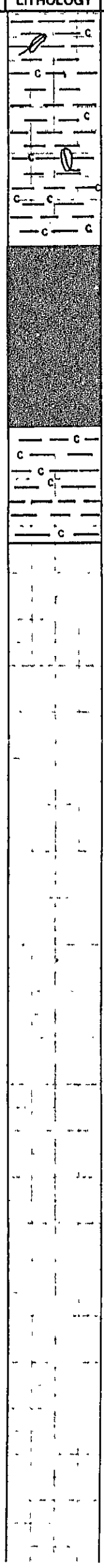
ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST: BRENDA

DATE: 13/8/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY									DESCRIPTION
	20										plt. frags.
	100										dull cw bright bands
	200										
	300										

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B209

SEAM NAME SEVEN SISTERS LOCATION E59225/N 44820

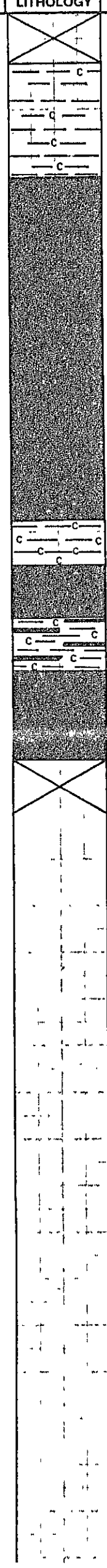
FORMATION ELEVATION 1140

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 13/8/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY										DESCRIPTION
	20											Coaly in places
	100											Bright and dull V. weathered
	200											Thin stringers
	300											Dull-muddy

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B210

SEAM NAME SEVEN SISTERS LOCATION E59225/N 44830

FORMATION ELEVATION 1140

COMMENTS ORIGIN OF LOG. CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 13/8/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
			Bright
	100		
	200		dull and bright bands
	300		
			Carb. V. thin coal stringers
	400		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER B283

SEAM NAME

LOCATION E59645/N 47340

FORMATION

ELEVATION 1260

COMMENTS

ORIGIN OF LOG CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST BRENDA DATE 15/9/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		Dull cw Bright Bands
	200		
	300		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H075

SEAM NAME

LOCATION E59205/N 43449

FORMATION

ELEVATION 1295

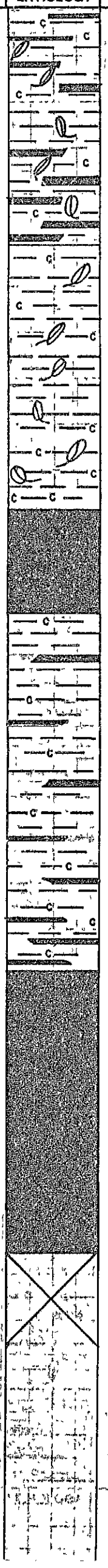
COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 16/7/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		
	200		
	300		
	400		mostly bright deeply weathered
	500		
	600		obsc.

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H081

SEAM NAME

LOCATION E56985/N 43510

FORMATION

ELEVATION 1462

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 24/7/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		
			Dirt parting
	200		
	300		
	400		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY: FALLING CREEK FK

NTS LOCATION: 930/P

DRILL HOLE OR OUTCROP NUMBER: L075

SEAM NAME: BRENDA??

LOCATION: E60225/N 42215

FORMATION:

ELEVATION: 1220

COMMENTS:

ORIGIN OF LOG: CORE ___ CHIP SAMPLES ___

GEOPHYSICAL LOG ___ OUTCROP ___

GEOLOGIST: L. K. Mudry

DATE:

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	
	20		bright banded hard not weathered
	100		
	200		
	300		
	400		
	500		

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523

PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY: FALLING CREEK K

NTS LOCATION: 93O/P

DRILL HOLE OR OUTCROP NUMBER: H013

SEAM NAME: 2

LOCATION: E60891/N 42515

FORMATION:

ELEVATION: 1132

COMMENTS:

ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST: J. HORGAN

DATE: 15/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		fissle mdst carbonaceous Dull at top
	100		Bright at base
	200		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H013

SEAM NAME 1a LOCATION E60887/N 42488

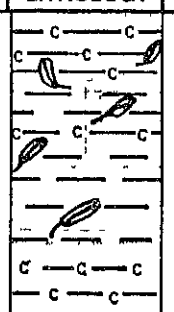
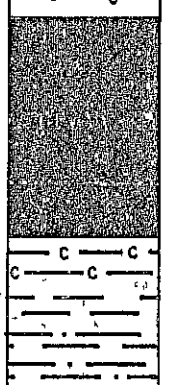
FORMATION ELEVATION 1130

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 14/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	COMMENTS
	20		Plt. frags.
	100		very weathered mostly bright
	200		

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523

PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H013

SEAM NAME 1D LOCATION E60888 N42490

FORMATION ELEVATION 1130m

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 14/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY								COMMENTS
	20									
	100									transitional to carb mdst?
										sample taken
	200									carb mdst
										concretionary
	300									

LEAVE THIS MARGIN FOR FILING

523

PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION _____ DRILL HOLE OR OUTCROP NUMBER H013

SEAM NAME 1C LOCATION E60891/N 42505

FORMATION _____ ELEVATION 1130 m

COMMENTS _____ ORIGIN OF LOG: CORE _____ CHIP SAMPLES _____

GEOPHYSICAL LOG _____ OUTCROP _____

GEOLOGIST J. HORGAN DATE 15/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	COMMENTS
	20		Dull v. weathered
	100		Hard dull coal
	200		Sample taken
	300		Bright at base
	400		

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523

PR - Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H013

SEAM NAME 3 LOCATION E60891/N 42520

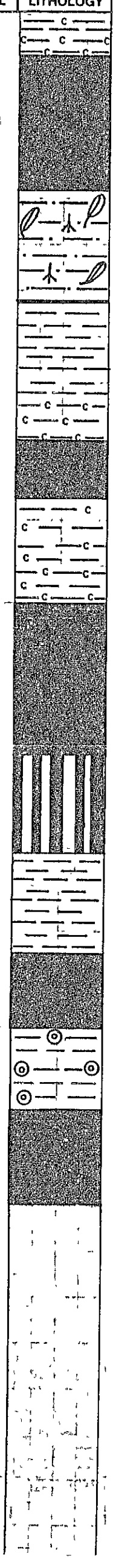
FORMATION ELEVATION 1132

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 15/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		deeply weathered impure
	100		Rootlets and Plant debris some fe staining
			Fe staining carb bottom crushable-impure
	200		Fissile some impure coal
	300		finely fractured impure?
	400		Bright coal
			concr. sideritic
	500		V. deeply weathered

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER HO 14

SEAM NAME

LOCATION E60840/N 42555

FORMATION

ELEVATION 1158

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 15/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY								COMMENTS
	20									
	100									
	200									
	300									

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H035

SEAM NAME

LOCATION E60000/N 40389

FORMATION

ELEVATION 1367

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 19/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		
	200		
	300		obscured

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H041

SEAM NAME

LOCATION E60515/N 42605

FORMATION

ELEVATION 1200

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 21/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY
	20	
	100	
	200	
	300	

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H049

SEAM NAME

LOCATION E60325/N 41840

FORMATION

ELEVATION 1220 m

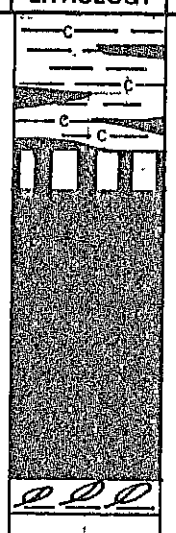
COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 22/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		
	100		Deeply weathered mostly bright?
			Sideritic
	200		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY Fil/FALLING CREEK K NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H052

SEAM NAME LOCATION E59995/N 42975

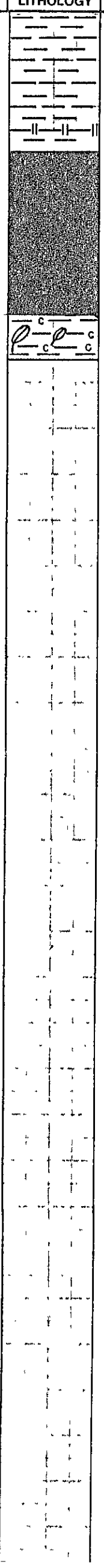
FORMATION ELEVATION 1325

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 23/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY												
	20													
														mdst parting
	100													
														some plt. frags.
	200													

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523

PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING-CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H074

SEAM NAME

LOCATION E59100/N 43670

FORMATION

ELEVATION 1208

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 15/7/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		fgr. sst.
			Rootlets
	100		Deeply weathered mostly bright
	200		carb-coaly stringers
	300		
	400		Abundant plt. frags. rootlets
	500		Deeply weathered mostly bright
	600		

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER D014

SEAM NAME

LOCATION E60565/N 44515

FORMATION

ELEVATION 1055

COMMENTS

ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST D. HALLAS DATE 16/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY
	20	
	100	
	200	
	300	

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523

PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER D047

SEAM NAME LOCATION E60270/N/41655

FORMATION ELEVATION 1271

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST D. HALLAS DATE 22/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		Non-carbonaceous
	100		Carb. mdst silst.-sst. interbedded
	200		V. carb
	300		Non-carb

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PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK

NTS LOCATION 930/P

DRILL HOLE OR OUTCROP NUMBER D133

SEAM NAME

LOCATION E59480/N 44796

FORMATION

ELEVATION 0957'

COMMENTS

ORIGIN OF LOG: CORE ____ CHIP SAMPLES ____

GEOPHYSICAL LOG ____ OUTCROP ____

GEOLOGIST D. HALLAS

DATE 16/7/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY										
	20											
												dull
	100											
	200											
	300											

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523

PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK PER NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER H009

SEAM NAME LOCATION E63110/N 39780

FORMATION ELEVATION 1143

COMMENTS ORIGIN OF LOG: CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST J. HORGAN DATE 11/6/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
	20		Sideritic, grades
			Sandy siltstone
	100		
	200		Dirt parting
	300		
	300		

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PR-Falling Creek 81(3) A

ESSO MINERALS CANADA — COAL DEPARTMENT

GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 930/P DRILL HOLE OR OUTCROP NUMBER D175

SEAM NAME

LOCATION E58680/N 45335

FORMATION

ELEVATION 1155

COMMENTS

ORIGIN OF LOG CORE CHIP SAMPLES

GEOPHYSICAL LOG OUTCROP

GEOLOGIST D. HALLAS DATE 26/8/81

DESCRIPTION

SAMPLE	INTERVAL	LITHOLOGY	DESCRIPTION
			obscured
	20		dull
	100		obscured

NOTE. LEAVE THIS STRIP ON FOR FILING.

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PR- Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK

NTS LOCATION 93-0

DRILL HOLE OR OUTCROP NUMBER 81-1

SEAM NAME

LOCATION 59410mE, 44010mN

FORMATION GETHING

ELEVATION

COMMENTS

ORIGIN OF LOG: CORE x CHIP SAMPLES

GEOPHYSICAL LOG BED OUTCROP

RESOLUTION DENSITY

GEOLOGIST DATE

LITHOLOGICAL DESCRIPTION

CALIPER	SAMPLE NUMBER	INTERVAL	LITHOLOGY SYMBOL	SEDIMENTARY STRUCTURES	GRAIN SIZE	COAL DESCRIPTION & DETAIL GEOPHYSICAL LOG	COLOR CODE	COMPOSITION	POROSITY	ROUNDING	SORTING	ACCESSORY MINERALS	STRUCTURE	COMMENTS
		170.50												38° dip
		170.74												total seam thickness =2.36m=1.86m true
	2													coal recovered 1.85m=1.45m true % recovery=78%
		172.34												
		172.61												
		172.86												

NOTE. LEAVE THIS STRIP ON FOR FILING

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PR- Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 93-0 DRILL HOLE OR OUTCROP NUMBER 81-2

SEAM NAME LOCATION 60605mE, 42122mN

FORMATION GETHING ELEVATION 1185m

COMMENTS ORIGIN OF LOG. CORE X CHIP SAMPLES

GEOPHYSICAL LOG BED RESOLUTION DENSITY OUTCROP

GEOLOGIST DATE

LITHOLOGICAL DESCRIPTION

CALIPER	SAMPLE NUMBER	INTERVAL	LITHOLOGY SYMBOL	SEDIMENTARY STRUCTURES	GRAIN SIZE	COAL DESCRIPTION & DETAIL GEOPHYSICAL LOG	COLOR CODE	COMPOSITION	POROSITY	ROUNDING	SORTING	ACCESSORY MINERALS	STRUCTURE	COMMENTS
		138.68												Dip 24° Interval thickness= 7.49m true thickness =6.8
		139												
		139.84												
	15 Vitr.	140												Coal seam .92m true thickness =.84m Coal recovered =.59 =64% Recovery
		140.76												
		141												
		142												
		142.08												
		143												
		144												
		144.72												
		145												Dip 32° Coal seam thickness =1.42m=1.23m true recovery = 32%
		145.3												
		146												
		146.17												

NOTE LEAVE THIS STRIP ON FOR FILING

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PR- Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 93-0 DRILL HOLE OR OUTCROP NUMBER 81-2

SEAM NAME LOCATION 60605mE, 42122mN

FORMATION GETHING ELEVATION 1185m

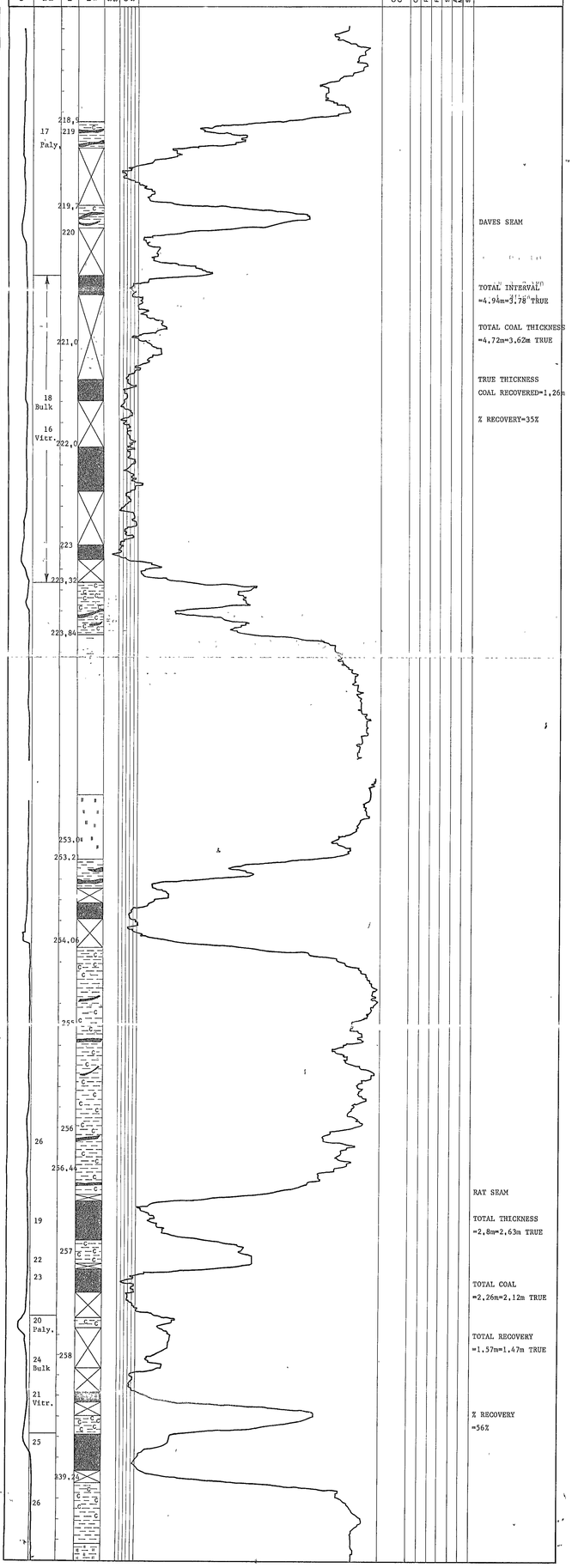
COMMENTS ORIGIN OF LOG: CORE X CHIP SAMPLES

GEOPHYSICAL LOG BED OUTCROP

RESOLUTION DENSITY

GEOLOGIST DATE

LITHOLOGICAL DESCRIPTION



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PR Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION 93-O DRILL HOLE OR OUTCROP NUMBER 81-2

SEAM NAME

LOCATION 60605 mE, 42122mN

FORMATION GETHING

ELEVATION 1185 m

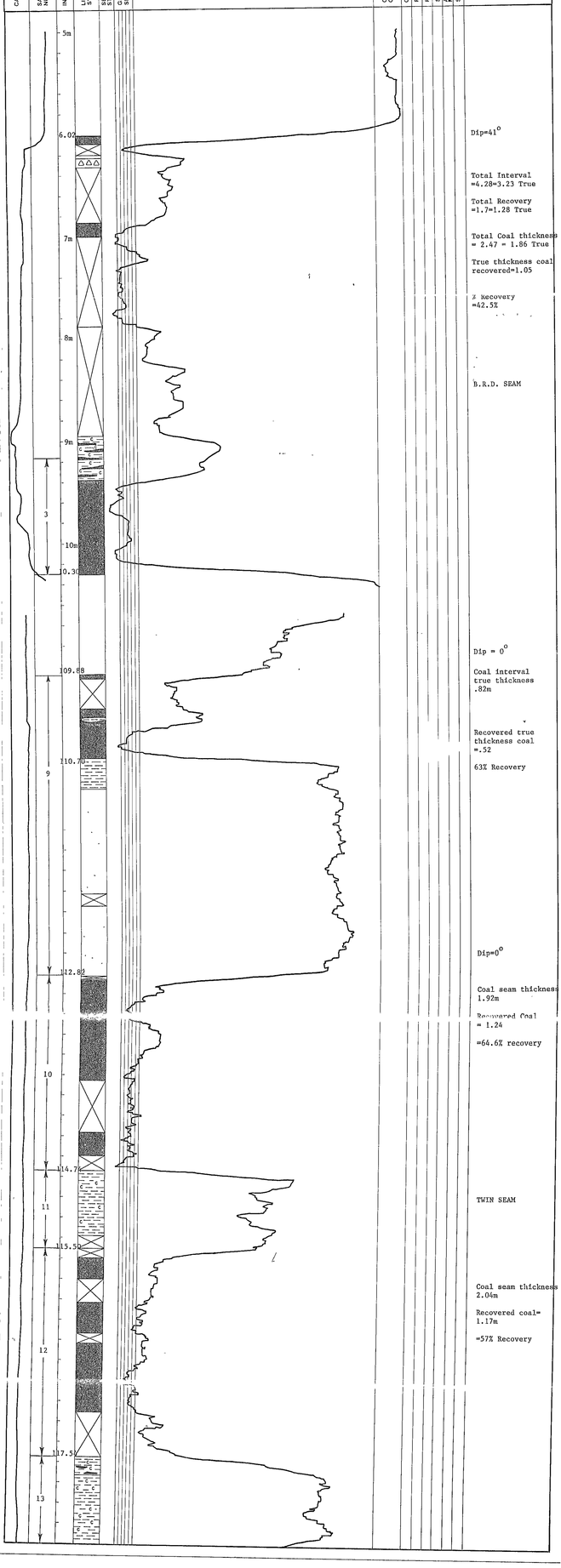
COMMENTS

ORIGIN OF LOG. CORE X CHIP SAMPLES

GEOPHYSICAL LOG Bed Resolution Density OUTCROP

GEOLOGIST DATE

LITHOLOGICAL DESCRIPTION



NOTE: LEAVE THIS STRIP ON FOR FILING.

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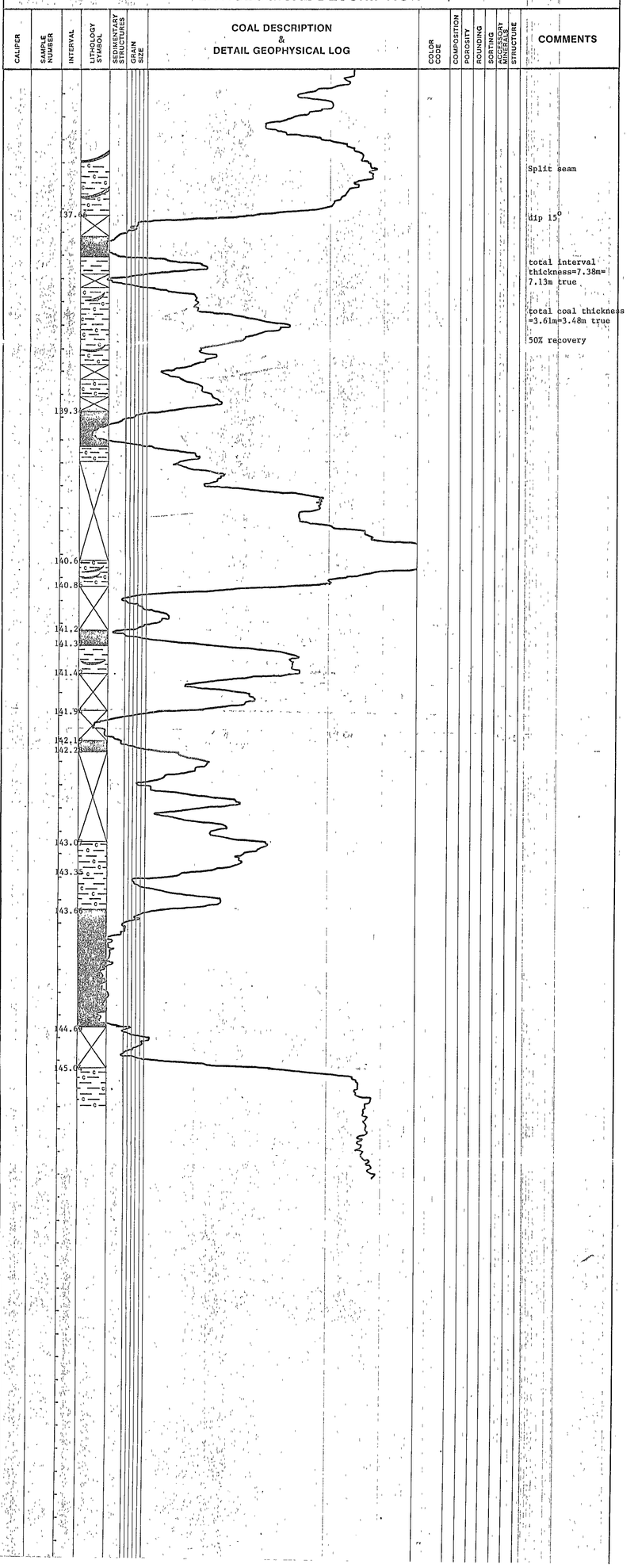
PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY: FALLING CREEK
NTS LOCATION:
DRILL HOLE OR OUTCROP NUMBER: 81-3
SEAM NAME: SPLIT SEAM
LOCATION: 62046mE, 40513mN
FORMATION: GETHING
ELEVATION:
COMMENTS:
ORIGIN OF LOG: CORE X CHIP SAMPLES
GEOPHYSICAL LOG BED RESOLUTION DENSITY
OUTCROP
GEOLOGIST:
DATE:

LITHOLOGICAL DESCRIPTION



NOTE. LEAVE THIS STRIP ON FOR FILING.

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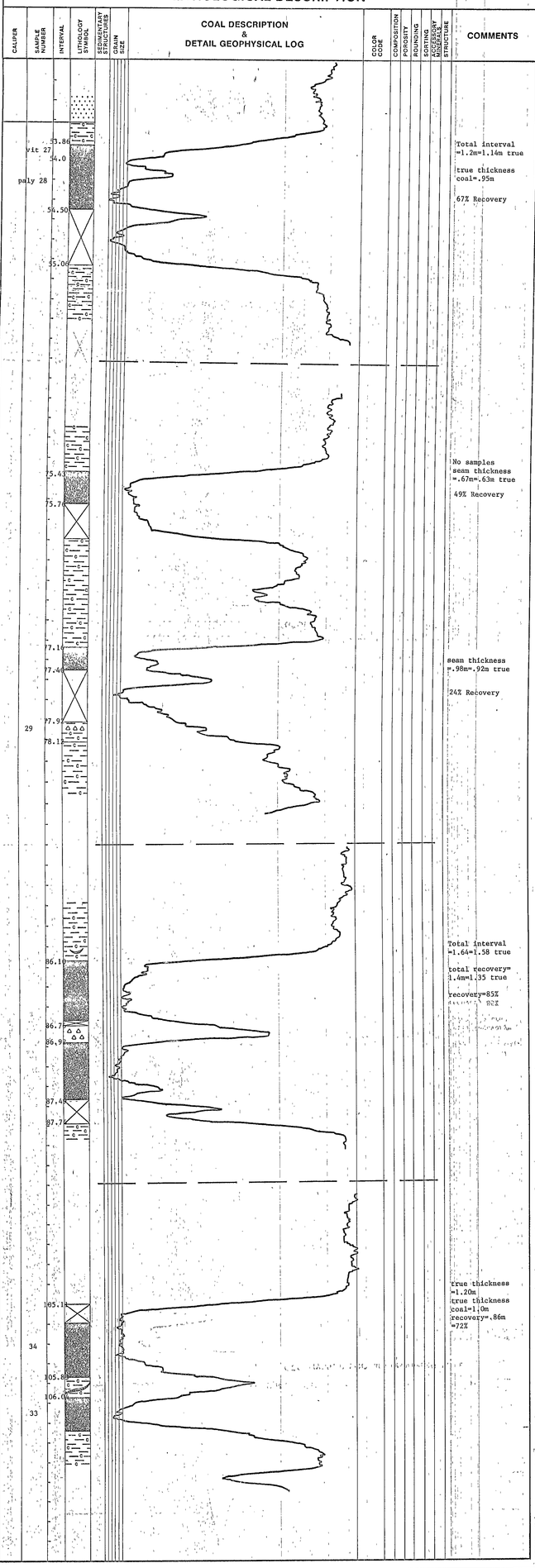
PR-Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY: FALLING CREEK
NTS LOCATION: 93-0
DRILL HOLE OR OUTCROP NUMBER: 81-3
SEAM NAME:
LOCATION: 62046mE, 40513mN
FORMATION: GETHING
ELEVATION:
COMMENTS:
ORIGIN OF LOG: CORE X CHIP SAMPLES
GEOPHYSICAL LOG BED OUTCROP
RESOLUTION DENSITY
GEOLOGIST: DATE:

LITHOLOGICAL DESCRIPTION



NOTE: LEAVE THIS STRIP ON FOR FILING.

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PR- Falling Creek 81(3)A

ESSO MINERALS CANADA — COAL DEPARTMENT
GRAPHIC COAL SEAM LOG

PROPERTY FALLING CREEK NTS LOCATION _____ DRILL HOLE OR OUTCROP NUMBER 81-3

SEAM NAME _____ LOCATION 62046mE, 40513mN

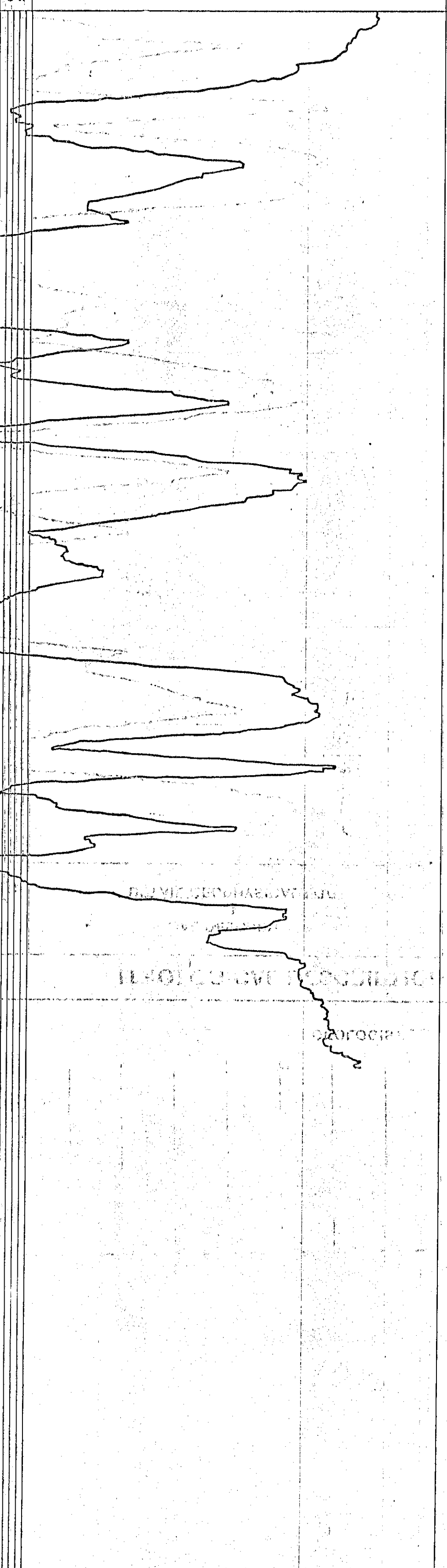
FORMATION Gething ELEVATION _____

COMMENTS _____ ORIGIN OF LOG: CORE X CHIP SAMPLES _____

GEOPHYSICAL LOG BED RESOLUTION DENSITY OUTCROP _____

GEOLOGIST _____ DATE _____

LITHOLOGICAL DESCRIPTION

CALIPER	SAMPLE NUMBER	INTERVAL	LITHOLOGY SYMBOL	SEDIMENTARY STRUCTURES	GRAIN SIZE	COAL DESCRIPTION & DETAIL GEOPHYSICAL LOG	COLOR CODE	COMPOSITION	POROSITY	ROUNDING	SORTING	ACCESSORY MINERALS	STRUCTURE	COMMENTS
		161.45												total seam interval thickness 4.58m = 4.3m true total coal thickness =2.72m=2.55 67% recovery
		161.80												
		162.26												
		162.82												
		162.95												
		163.17												
		163.34												
		163.50												
		163.86												
		164.14												
		164.28												
		164.72												
		165.10												
		165.36												
		165.58												
		165.69												
		166.03												

COMPANY	BP		
WELL	25		
FIELD			
COUNTY			
STATE			
LOCATION			
SECTION		TWP.	RGE.
PERMANENT DATUM		ELEV.	
LOG MEASURED FROM		ELEV.	
DRILLING MEASURED FROM		ELEV.	
DATE			
RUN NO.			
DEPTH-DRILLER			
DEPTH-LOGGER			
BTM. LOG INTERVAL			
TOP LOG INTERVAL			
CASING-DRILLER			
CASING-LOGGER			
BIT SIZE			
TYPE FLUID IN HOLE			
DENS. / VISC.			
PH / FLUID LOSS			
SOURCE OF SAMPLE			
RM @ MEAS. TEMP.			
RMF @ MEAS. TEMP.			
RMC @ MEAS. TEMP.			
SOURCE RMF / RMC			
RM @ BHT			
TIME SINCE CIRC.			
MAX. REC. TEMP.			
EQUIP. LOCATION			
RECORDED BY			
WITNESSED BY			

EQUIPMENT AND RECORDER DATA									
RECORDER	TYPE	SERIAL NO.	SPEED	SENSITIVITY	TIME	TIME MARK	DEPTH	DEPTH MARK	REMARKS

BOREHOLE RECORD					
BIT NO.	SIZE	FROM	TO		

CASING RECORD				
SIZE	WGT.	GRADE	FROM	TO

CASING SIZE	WGT.	GRADE	FROM	TO	REMARKS

TYPE			
SIZE			
DEPTH			
SACKS			
REMARKS			

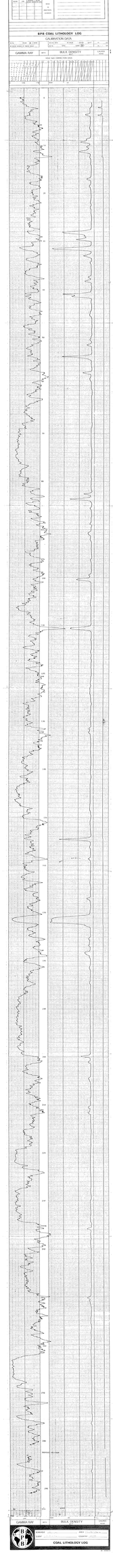
BP8 COAL LITHOLOGY LOG

CALIBRATION DATA

G.R.		G.R. @ 1000		G.R.		G.R.	
G.R.		G.R. @ 1000		G.R.		G.R.	

GAMMA RAY	API	BULK DENSITY	G/CC
0		2.0	3.0

DENSITY CORRECTION CURVE



GAMMA RAY	API	BULK DENSITY	G/CC
0		2.0	3.0

COMPANY		WELL	25
FIELD		COUNTY	
STATE		COORDINATES	

COAL LITHOLOGY LOG

COAL LITHOLOGY LOG

BPB

BOREHOLE KMT-R-1
CLIENT ESSO MINERALS
AREA FALLING CREEK
COUNTRY CANADA
DATE LOGGED 8-26-85

PROJECTION SCALE 30°= 5m

SONDE TYPE	CONVERSION SONDE
LOG SUITE	GAMMA RAY, L & DENSITY, CALIPER

GAMMA RAY	HIGH SENSITIVITY	2.7m	1.5m
DENSITY	HIGH SENSITIVITY	2.7m	1.5m
CALIPER	ARM PADDLE	2.7m	1.5m
WITNESS		4.2 - 2.9	5.1

OPERATION DATA

DATE	1985	1985
LOGGER	1	1
LOG NUMBER	1	1
RUN NUMBER	1	1
TIME	1:00	2:00
DEPTH	0	0
SPEED	9	9
DIRECTION	R	R
CASING SIZE	2.7m	2.7m
BIT SIZE	0	0
MUD TYPE	0	0
MUD LEVEL	0	0

FIELD DATA

LOGGER	CLIFF GRAYCAR
CALIBRATOR	2m

BOREHOLE DATA

DRILLING CONTRACTOR	ARMANDO CAMPAS
DRILLING METHOD	DIAMOND CORE
CASING SIZE	2.7m
CASING DEPTH	2.7m
BIT SIZE	2.5m
MUD TYPE	0
MUD LEVEL	0
DIRECTION	0
DIP	0
COORDINATES	0
ELEVATION	0
COLLAR	0
TOTAL DEPTH	2.7m

PROJECT LEVEL
DRILLER
SURVEYOR

EQUIPMENT AND RECORDING DATA

COAL/EMBEDMENT-SONDE CONVERSION DATA: 1 m = 0.5 m; 2 m = 1 m; 3 m = 1.5 m; 4 m = 2 m; 5 m = 2.5 m; 6 m = 3 m; 7 m = 3.5 m; 8 m = 4 m; 9 m = 4.5 m; 10 m = 5 m

LOG	EQUIPMENT		TAPING			PANEL			DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORDED SPEED	DIRECTION REPLAY	SPEED	TC SECS	NORM	FROM	TO	NORM
GAMMA RAY	1818	5151										
DENSITY	167			Y	9	R	9	1	1.5	28	0	281
CALIPER	93993			Y	9	R	9	.3	5.45	28	0	281
				Y	9	R	9	.3		28	0	281

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to remarks log)

FROM	17.4m	INTERVAL TOTAL
TO	26.9m	9m
INTERVAL	5m	

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
14	N-N	109-1	
294 219	DEN		

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

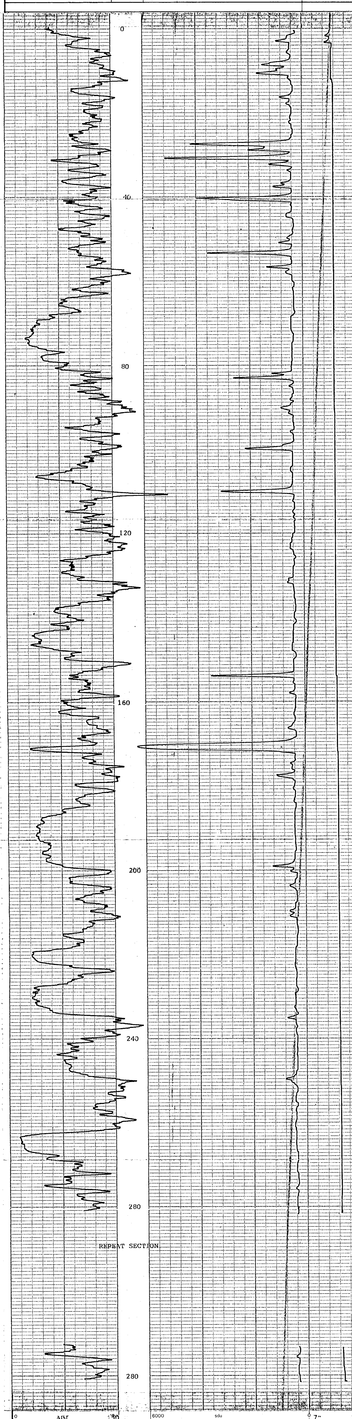
CALIBRATION DATA

JG No 1-7 VALUE 1 @ 2 DIAM
JG MARK SHOWN AT ABOVE VALUE -

JG CAL DATE 24-8-85 JG VALUE 424 SDU@ g/cm³ 2 m 5.82 GPS
JG No 1-1993 SPAN 6/100 NORM 2m 5.05 7 m 9.35 GPS

GAMMA RAY | DEPTH | BULK DENSITY g/cm³ | CALIPER INCHES

HOLE SIZE CORRECTION DATA



GAMMA RAY | DEPTH | BULK DENSITY g/cm³ | CALIPER INCHES

BPB

BOREHOLE KMT-R-1 AREA FALLING CREEK
CLIENT ESSO MINERALS COUNTRY CANADA

COAL LITHOLOGY LOG

MT A10141 R

PR-Falling Creek 81(3)A 81-1

NEUTRON-NEUTRON GAMMA LOG

BOREHOLE EMC 81-1

CLIENT ESSO MINERALS

AREA FALLING CREEK

COUNTRY CANADA

DATE LOGGED 6-9-81

DEPTH SCALE 100-1

3 OF 6 LOGS

BOREHOLE DATA REFER TO Lithology LOG

OPERATION DATA REFER TO " LOG

EQUIPMENT AND RECORDING DATA

LOG	TAPING LOG TAPED	TAPING RECORD SPEED	TAPING DIRECT or REPLAY	PANEL SPEED	PANEL T.C. SECS	PANEL NORM	CAL COEFF
N-N	Y	9	D	9	1	7.17	
Gamma	Y	9	D	9	1		1.33

SONDE NO 9 SOURCE NO 4512

REMARKS

523

Gamma	DEPTH	Neutron
0 API 150		0 SNU 800

0 API 150		0 SNU 800
Gamma	DEPTH	Neutron

BOREHOLE EMC 81-1

CLIENT ESSO MINERALS

AREA FALLING CREEK

COUNTRY CANADA

MY A58452R

Photographic Negative

VISUAL APPLICATIONS AND C

REMARKS (CLOUD, ETC.)

HEAVY SOIL PUDDLES

AREA: GALLINA CREEK

SPACE CRAFT: LANDSAT

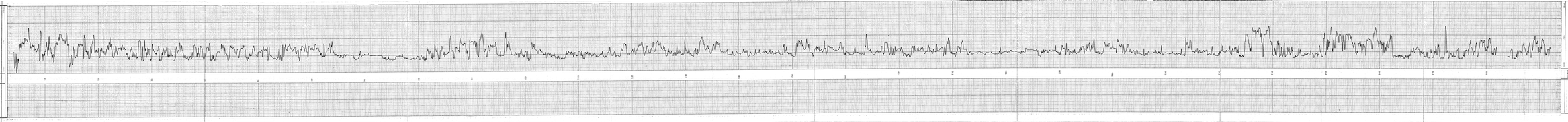
LAT: 0.000000 LONG: 0.000000

REMOVED DATA: NONE-COLLECTED

OPERATION DATA: NONE-0

EQUIPMENT AND RECORDING DATA

523



PRINT CONTROL

PRINT LAT. 0.000000

PRINT LONG. 0.000000

PR-Falling Creek 81(3)A 81-1

BPB

COAL QUALITY LOG

BOREHOLE	EMC 81-1
CLIENT	ESSO MINERALS
AREA	FALLING CREEK
COUNTRY	CANADA
DATE LOGGED	6-9-81
DEPTH SCALE	20-1
	5 OF 6 LOGS

BOREHOLE DATA	REFER TO LITHOLOGY LOG
OPERATION DATA	REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA	
COAL COMBINATION SONDE:	

SIDEWALL POSITION

LOG	TAPING			PANEL		CAL CHECK
	LOG TAPED	RECORD SPEED	RECORD RELAY	SPEED	SCKS	NORM
GAMMA RAY	Y	2	R	2	3	1.5
L.S. DENSITY	Y	2	R	2	1	5.0

SOURCE, SONDE AND CALIBRATION

REFER TO LITHOLOGY LOG

COAL QUALITY LOG INTERVALS	
FROM	174m
TO	169m
INTERVAL	5m
FROM	
TO	
INTERVAL	
INTERVAL	± 5m
REMARKS	

523

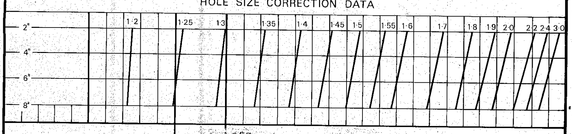
SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY L.S. DENSITY

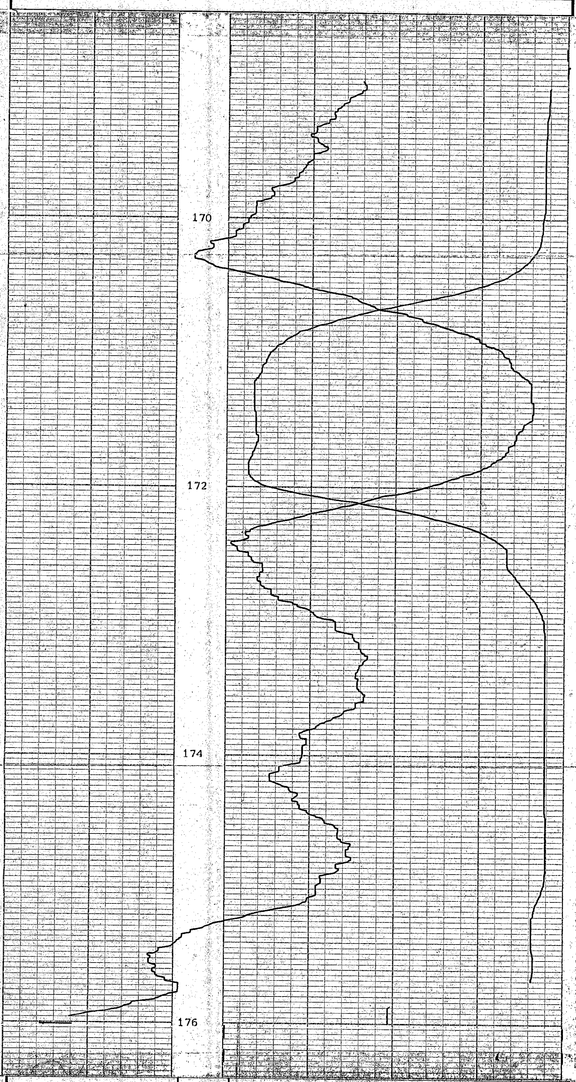
BPB COAL QUALITY LOG

DEPTH	GAMMA RAY
	COAL BULK DENSITY g/cm³

HOLE SIZE CORRECTION DATA



150	API	0
6,000	s.d.u.	0



6,000	s.d.u.	0
250	API	0
	COAL BULK DENSITY g/cm³	
DEPTH	GAMMA RAY	

BPB

BOREHOLE EMC 81-1	AREA FALLING CREEK
CLIENT ESSO MINERALS	COUNTRY CANADA

COAL QUALITY LOG

MY 88002 R

PR-Falling Creek 81(3)A 81-1

BOREHOLE ENC 81-1

CLIENT ESSO MINERALS

AREA FALLING CREEK

COUNTRY CANADA

DATE LOGGED 6-9-81

DEPTH SCALE 20-1

6 OF 6 LOGS

SEAM THICKNESS LOG

BOREHOLE DATA	REFER TO LITHOLOGY LOG
OPERATION DATA	REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SIDEWALL POSITION

LOG	TAPING				PANEL		ANCHOR
	LOG TAPED	RECORDING SPEED	REPLAY	SPEED	GAIN	NORM	
CALIPER	Y	2	R	2	1		
B.R DENSITY	Y	2	R	2	.3	5.88	

SOURCE, SONDE AND CALIBRATION

REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	174m
TO	169m
INTERVAL	5m
FROM	
TO	
INTERVAL	
INTERVAL TOTAL	# 5m

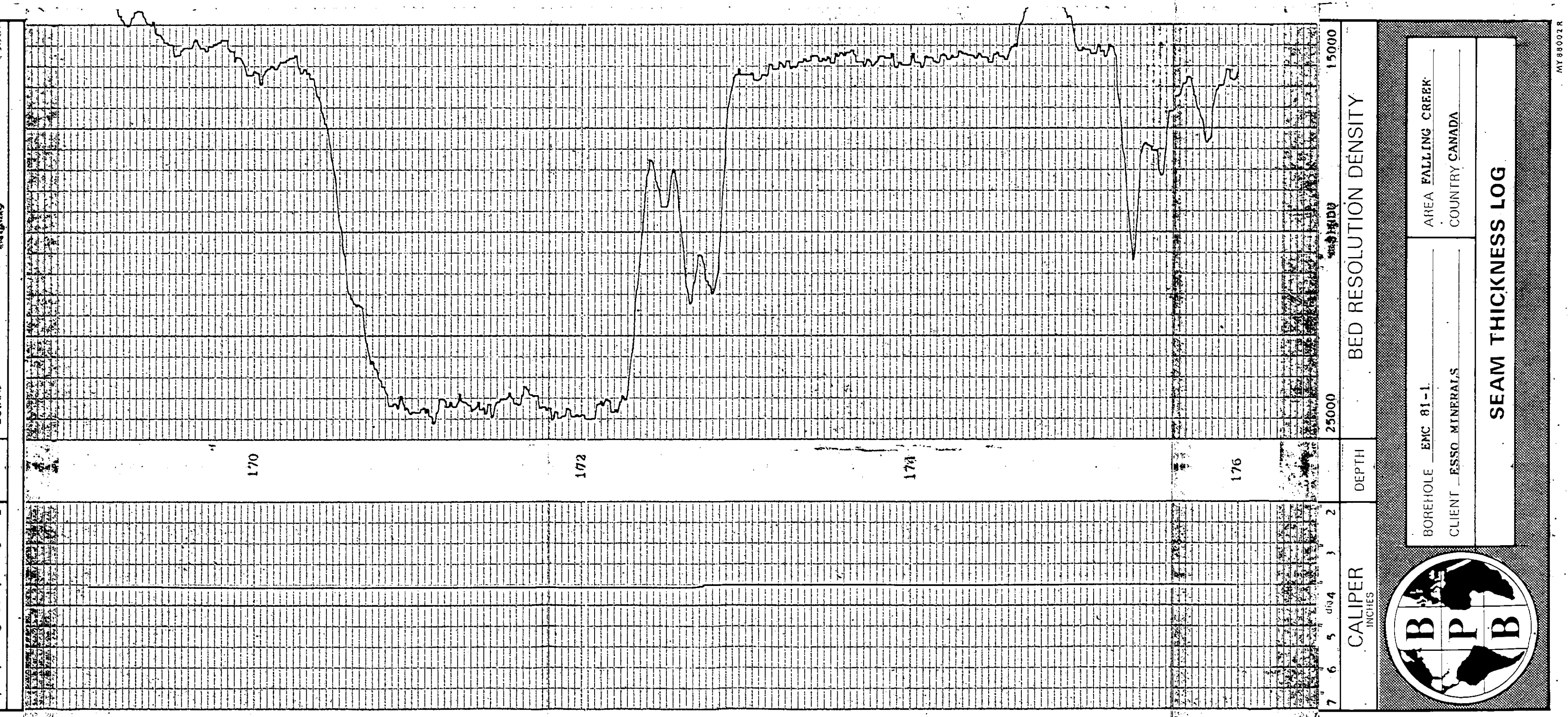
REMARKS

523

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: CALIPER B.R. DENSITY

B P B SEAM THICKNESS LOG



BOREHOLE ENC 81-1

CLIENT ESSO MINERALS

AREA FALLING CREEK

COUNTRY CANADA

SEAM THICKNESS LOG

MT 880028

DR-Falling Creek 81(3)A 81-2

COAL LITHOLOGY LOG

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY, L.S. DENSITY, CALIPER

BOREHOLE: EMC 81-2
CLIENT: ESSO MINERALS
AREA: FALLING CREEK
COUNTRY: CANADA
DATE LOGGED: 15-9-81
DEPTH SCALE: 100-1
1 OF 5 LOGS

523

BOREHOLE DATA

PERMANENT DATUM	GROUND LEVEL	
ELEVATION OF P.D.	"	"
MEASUREMENTS FROM	BPB: G.L.	DRILLER: G.L.
DEPTH REACHED	341.5 m	340.5 m
CASING SHOE		
BIT SIZES	1: 96mm TO TD	2: TO
	3: TO	4: TO
CASING SIZES	1: 4" TO 6m	2: TO

FLUID DATA

NATURE	QUICK THICK
S.G.	1.01 gm/cc
LEVEL	0 m
VISCOSITY	
Rm at meas. temp.	
B.H.T.	

OPERATION DATA

FIRST READING	341m
LAST READING	0m
INTERVAL LOGGED	341m
UNIT-TRUCK No.	42 214
ENGINEER	N.M.
WITNESS	J. HORGAN

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT: SONDE	SOURCE	CALIBRATOR	TAPING: LOG TAPED	RECORD SPEED	DIRECT or REPLAY	PANEL: SPEED	TC SECS	NORM	CAL COEFF	DEPTHS: FROM	TO	INTERVAL	SEAM LOG RUN
	1838	5851												
GAMMA RAY	SIDEWALL POSITION		367	Y	9	0	9	1		1.63	339	0	339	
L.S. DENSITY			R3993	Y	9	0	9	1/3	5.05		339	0	339	
CALIPER				Y	9	0	9	1/3			339	0	339	

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	260 m	225 m	147 m	119 m	13 m	INTERVAL TOTAL
TO	252 m	213 m	138 m	109 m	5 m	
INTERVAL	8 m	12 m	9 m	10 m	8 m	= 47m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
9	N-N	100-1	
219	VERT		

REFER TO ADDITIONAL HEADINGS

REMARKS

COULD NOT GET DOWN WITH DIPMETER

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No. 367 VALUE 510 @ 2" DIAM	JIG CAL DATE 24-8-81 JIG VALUE 4247 SDU @ g/cm³	2" ins 591 cps
JIG MARK SHOWN AT ABOVE VALUE -x.3	JIG No. R3993 SPAN 6000 NORM SDU/CPS = 5.13	7" ins 943 cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

BOREHOLE: EMC 81-2
AREA: FALLING CREEK
CLIENT: ESSO MINERALS
COUNTRY: CANADA

COAL LITHOLOGY LOG

MY A50261 R

COAL LITHOLOGY LOG

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY, COAL COMBINATION SONDE, L.S. DENSITY, CALIPER

BOREHOLE: EMC 81-2
CLIENT: Esso Minerals
AREA: Falling Creek
COUNTRY: Canada
DATE LOGGED: 25-9-81
UTM/GRID: 4100-1
Zone 5 Coord

PROBE DATA

PROBE NAME	Quick Talk	PROBE NAME	Quick Talk
SERIAL NO.	0-1-3-1-1	SERIAL NO.	0-1-3-1-1
CALIBRATION DATE	26-8-81	CALIBRATION DATE	26-8-81
CALIBRATOR	6	CALIBRATOR	6
CASING SIZE	4"	TO	72
CASING SIZE	4"	TO	72

OPERATION DATA

FIELD STATION	Esso Minerals		
OPERATOR	Dave Jones		
RIG			
DATE	25-9-81		
RUN NO.	1	2	3
DEPTH DRILLED	82m	72	
LOGGED INTERVAL	82m	72	
CASING SHOE	36.5m		
FLUID LEVEL	36.5m		
MAX. TEMPERATURE	6.6		
CALIBRATION	6.6		
TIME AFTER CIRCULATION	6 hrs		
RECORDED BY	Dave		
WITNESSED BY	Esso		

523

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT			TAPING		PANEL			CAL. CODE	DEPTHS		SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG DATE	RECORD SPEED	DIRECTION HELPS AT	SPEED	T.C. DECS	NORM	FROM	TO	WITNS
GAMMA RAY	1938	5851	367	Y	9	R	9	2		339	0	339
DENSITY				Y	9	R	9	1	5.13	339	0	339
CALIPER	SIDEWALL POSITION		23353	Y	9	R	9	1		339	0	339

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	260m	225m	187m	113m	13m				INTERVAL TOTAL
TO	252m	213m	138m	109m	8m				
INTERVAL	8m	12m	9m	10m	5m				47m

ADDITIONS SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
9	N.A	100-1	
219	VERT		

REFER TO ADDITIONAL HEADINGS

REMARKS

COULD NOT GET DOW WITH DIAMETER

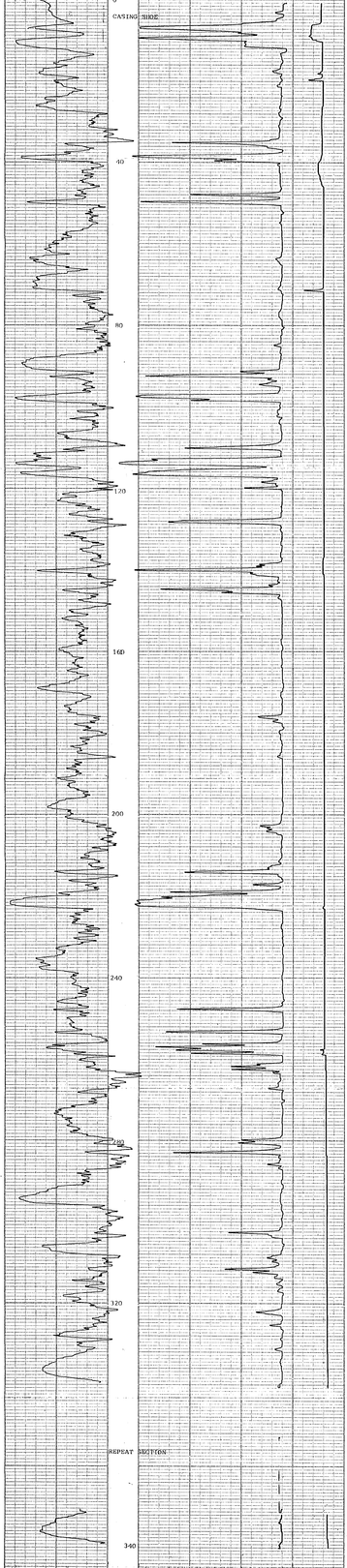
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No. 367 VALUE 510 @ 2 DAMP	JIG CAL DATE 26-8-81	JIG VALUE 2267	SOLID @ 2.0 g/cm³ 2 m 571 cps
JIG MARK SHOWN AT ABOVE VALUE -	JIG No 23353	SPAN 6000	NORM 100% 5.13 7 m 943 cps

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES
0 API 150		6000 solid	7" 2"

HOLE SIZE CORRECTION DATA

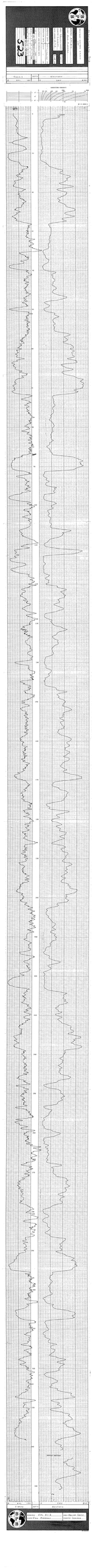


GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES
0 API 150		6000 solid	7" 2"

BOREHOLE: EMC 81-2 AREA: Falling Creek
CLIENT: Esso Minerals COUNTRY: Canada

COAL LITHOLOGY LOG

MT A10281 6


523
DIRECTION TRENDS
UPPER SURFACE

PR-Falling Creek 81(3)A 81-2

COAL QUALITY LOG

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY, L.S. DENSITY

BOREHOLE EMC 81-2
CLIENT ESSO MINERALS
AREA FALLING CREEK
COUNTRY CANADA
DATE LOGGED 15-9-81

DEPTH SCALE 20-1

4 OF 5 LOGS

BOREHOLE DATA — REFER TO LITHOLOGY LOG

OPERATION DATA — REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE:

LOG	LOG TAPED	RECORD SPEED	DIRECT OR REPLAY	PANEL SPEED	T.C. SECS	NORM.	CAL. COEFF.
GAMMA RAY	Y	2	R	2	3		1.63
L.S. DENSITY	Y	2	R	2	1	5.13	

SIDEWALL POSITION

SOURCE, SONDE AND CALIBRATION — REFER TO LITHOLOGY LOG

COAL QUALITY LOG INTERVALS

FROM	260m	225m	147m	119m	
TO	252m	213m	138m	109m	
INTERVAL	8m	12m	9m	10m	
FROM	13m				
TO	5m				
INTERVAL	8m				INTERVAL TOTAL = 47

REMARKS

523

BPB COAL QUALITY LOG

	DEPTH	GAMMA RAY / COAL BULK DENSITY g/cm3

HOLE SIZE CORRECTION DATA

2" 4" 6" 8" — 1·2, 1·25, 1·3, 1·35, 1·4, 1·45, 1·5, 1·55, 1·6, 1·7, 1·8, 1·9, 2·0, 2·2, 2·4, 3·0

150 API 0

6,000 s.d.u. 0

6,000 s.d.u. 0

150 API 0

	DEPTH	COAL BULK DENSITY g/cm3 / GAMMA RAY

BOREHOLE EMC 81-2
CLIENT ESSO MINERALS
AREA FALLING CREEK
COUNTRY CANADA

COAL QUALITY LOG

MY 88002 R

BPB INSTRUMENTS

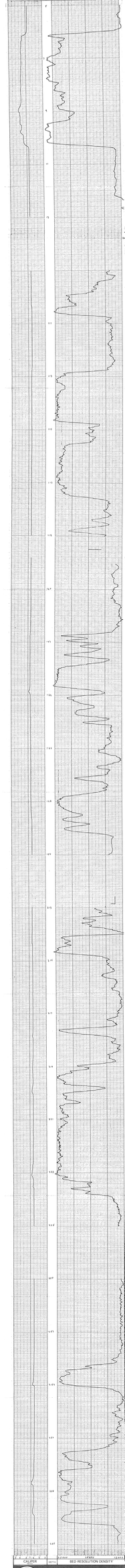
SEAM THICKNESS LOG

BPB INSTRUMENTS (UK) LIMITED
CHURCHILL HOUSE
CROYDON ROAD
CATERHAM
SURREY CR3 6QB
ENGLAND
TELEPHONE: CATERHAM (0883) 43822
TELEX: 946097 BPBCAT G

5CE

BPB SEAM THICKNESS LOG

CALIPER — DEPTH — BED RESOLUTION DENSITY



CALIPER — DEPTH — BED RESOLUTION DENSITY

BPB INSTRUMENTS

Company: PEL NZ Ltd.
Well: Kiwi Rimu
Date: 10-Dec-82
Run No: Log 4

SEAM THICKNESS LOG

Pre-Falling Creek 81(3)A

81-3

COAL LITHOLOGY LOG

BOREHOLE EMC 81-3
CLIENT Esso Minerals
AREA Falling Creek
COUNTRY Canada
DATE LOGGED 26-8-81
DEPTH SCALE 100:1

PERMANENT DATUM: Ground Level

SONDE TYPE: COAL COMBINATION SONDE

LOG SUITE: GAMMA RAY, L.S. DENSITY, CALIPER

OPERATION DATA: 523

FLUID DATA

WITNESS: J. Morgan

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	TC SECS	NORM	CAL COEFF	FROM	TO	INTERVAL
	1838	5951									
GAMMA RAY			367	Y	9	1		143	287	0	287
L.S. DENSITY			R3993	Y	9	1/2	5.15		287	0	287
CALIPER				Y	9				287	0	287

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	167m	146m	107m	88m	79m	56m	
TO	161m	136m	104m	85m	74m	53m	
INTERVAL	6m	10m	3m	3m	5m	3m	TOTAL +30m

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
9	N-N	100:1	
204 213	DIP		

REFER TO ADDITIONAL HEADINGS

REMARKS

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No 367 VALUE 51@ 2" DIAM — JIG CAL DATE 26-8-81 JIG VALUE (267) SDU@ g/cm³ 2 ins 643 cps

JIG MARK SHOWN AT ABOVE VALUE +3 — JIG No R3993 SPAN 6000 NORM 5.15 — 7 ins 991 cps

GAMMA RAY — DEPTH — BULK DENSITY g/cm³ — CALIPER INCHES

HOLE SIZE CORRECTION DATA

0 API 150 — 6000 SDU — 7" 2"

0 API 150 — 6000 SDU — 7" 2"

GAMMA RAY — DEPTH — BULK DENSITY g/cm³ — CALIPER INCHES

BOREHOLE EMC 81-3 AREA Falling Creek
CLIENT Esso Minerals COUNTRY Canada

COAL LITHOLOGY LOG

MF A30261 B

COAL LITHOLOGY LOG

BPB

BOREHOLE EMC 81-3
CLIENT Esso Minerals
AREA Falling Creek
COUNTRY Canada
DATE LOGGED 21-8-81
SYSTEM/PART 4-TOP-1
Jan-Feb 1981

SONDE TYPE: COAL COMBINATION SONDE
LOG SUITE: CLAY-DENSITY, S.S. DENSITY, CALIPER

DIP	AZIMUTH
90°	0°

BOREHOLE DATA	
PERMANENT DATUM	G.R.O.U.N.D. L.E.V.E.L.
ELEVATION GR P.D.	
DRILLED	
LOG MEASURED FROM	G.R.O.U.N.D. L.E.V.E.L.
DRILLER'S TD	6 m
LOGGER'S TD	6 m
CASING SIZE	2 7/8 in
CASING DEPTH	2.9 m
BIT SIZE	2 7/8 in
FLUID LEVEL	
FLUID TYPE	Fresh
FLUID DENSITY	1.0 g/cc
FLUID LOSS	
MAX RECORDED TEMP	
TIME SINCE CIRCULATION	

FLUID DATA			
CASING SIZE	1	2	3
	4"	2 7/8"	
CASING DEPTH	1	2	3
	1.5m	10.7m	12.2
BIT SIZE	1	2	3
	4"	2 7/8"	
FLUID LEVEL	1	2	3
FLUID TYPE	1	2	3
	Air	Fresh	
FLUID DENSITY	1	2	3
		1.0 g/cc	

OPERATION DATA	
PROBE NUMBER	523
CLAY-DENSITY	2 g/cc
S.S. DENSITY	2 g/cc
CALIPER	2 g/cc
DETECTOR NO.	6.5 - 2.5
SHOOTER	N/A
PROVEDES	

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	EQUIPMENT			TAPING			PANEL		CAL. TODAY	DEPTHS		SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG TAPE	RECORD SPEED	DIRECTION REPLAY	SPEED	T.C. SECS.	NORM	FROM	TO	MERGE
	1938	5921										
GAMMA RAY		367		Y	9	R	9	1		143	297	0 287
DENSITY		63117		Y	9	R	9	1/2	5.0		297	0 287
CALIPER	SIDEWALL POSITION			Y	9	R	9	1/2			297	0 287

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (refer to stratigraphic log)

FROM	167m	166m	107m	98m	79m	56m						INTERVAL TOTAL
TO	161m	136m	106m	85m	74m	53m						
INTERVAL	6m	10m	3m	3m	5m	3m						

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG
9	87-N	100-1	
304	0-P		
303			

REFER TO ADDITIONAL HEADINGS

REMARKS

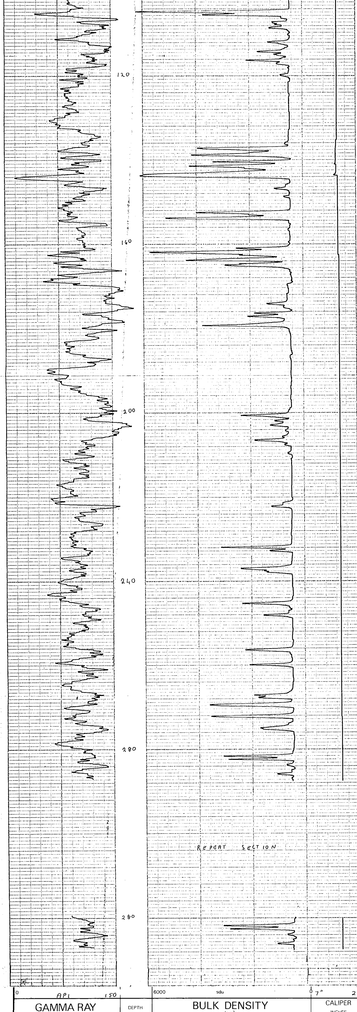
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No. 367 VALUE 5.0 @ 2 DIAM	JIG CAL DATE 26-8-81 JIG VALUE 4267 SOL ① g/cm³		2 m 643 CPS
JIG MARK SHOWN AT ABOVE VALUE -	JIG 63117 SPAN 6000 NORM 100% 5.75		7 m 971 CPS

GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES

HOLE SIZE CORRECTION DATA



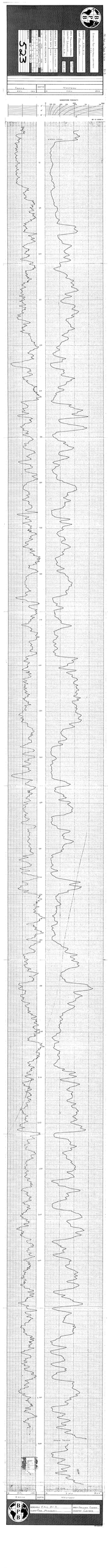
GAMMA RAY	DEPTH	BULK DENSITY g/cm³	CALIPER INCHES
API 150		6000	7" 2"

BPB

BOREHOLE EMC 81-3 AREA Falling Creek
CLIENT Esso Minerals COUNTRY Canada

COAL LITHOLOGY LOG

MY A10381 B


523
RANGE
DATE
MATERIAL
DIRECTION PERCENTS
WATER LEVEL
END TRACE

BPB

SEAM THICKNESS LOG

BOREHOLE: EAC 81-2
CLIENT: ESSO MINERALS
AREA: FALLING CREEK
COUNTRY: CANADA
DATE LOGGED: 20-3-81

SEAM THICKNESS LOG

BOREHOLE DATA
BOREHOLE NO. EAC 81-2
CLIENT ESSO MINERALS
AREA FALLING CREEK
COUNTRY CANADA
DATE LOGGED 20-3-81

CALIBRATION DATA
CALIBRATED BY
DATE CALIBRATED
CALIBRATION RESULTS

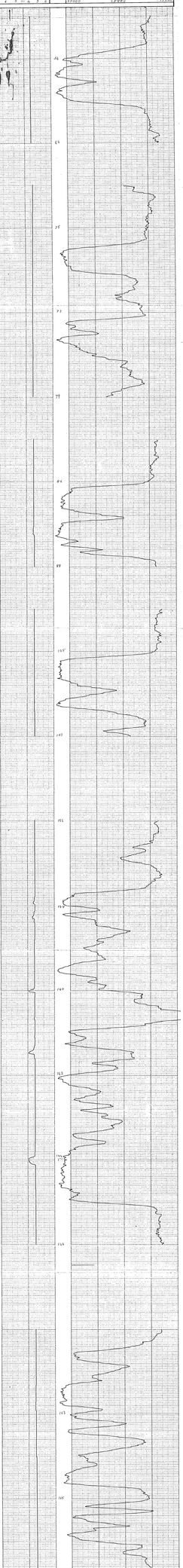
EQUIPMENT AND RECORDING DATA
EQUIPMENT TYPE
SIGNAL CONDITIONING
RECORDING SYSTEM
RECORDING SPEED
RECORDING SCALE

SEAM THICKNESS OR INTERVALS
SEAM THICKNESS
INTERVALS

523

B P B SEAM THICKNESS LOG

CALIPER (INCHES)	DEPTH	BED RESOLUTION DENSITY
4 5 6 7 8 9	2000	1.4 1.5 1.6



CALIPER	DEPTH	BED RESOLUTION DENSITY
4 5 6 7 8 9	2000	1.4 1.5 1.6

BPB

BOREHOLE EAC 81-2 | AREA FALLING CREEK
CLIENT ESSO MINERALS | COUNTRY CANADA

SEAM THICKNESS LOG

BP 84-0-0-0

BPB

COAL QUALITY LOG

WELL NAME: ESSO MONTEREI
CONTRACTOR: CANADIAN
COUNTRY: CANADA
DATE: 1-8-86
RUN NUMBER: 1
DEPTH DRILLER: 523
DEPTH LOGGER: 523
BOTTOM LOG INTERVAL: 523
TOP LOG INTERVAL: 0
CASING DRILLER: 0
CASING LOGGER: 0
BIT SIZE: 0
TYPE FLUID IN HOLE: AIR
DENSITY: 0
VISCOSITY: 0
PH: 0
FLUID LEVEL: 0
MAX REC. TEMP: 0
ESTIMATED BHT: 0
TIME SINCE CIRCULATION: 0
TIME SINCE STOP: 0
MAX. RECORDED TEMP: 0
EQUIPMENT NO.: 0
LOCATION: 0
RECORDED BY: 0
WITNESSED BY: 0

BOREHOLE RECORD
BIT SIZE: 0
FROM: 0
TO: 0
CASING SIZE: 0
WEIGHT: 0
FROM: 0
TO: 0

COAL QUALITY CUT OFF POINTS
ASH: 0
SULPHUR: 0
MOISTURE: 0
BTU: 0

REMARKS: 0

523

Pa-Fraser Creek N/0/4

S1-5

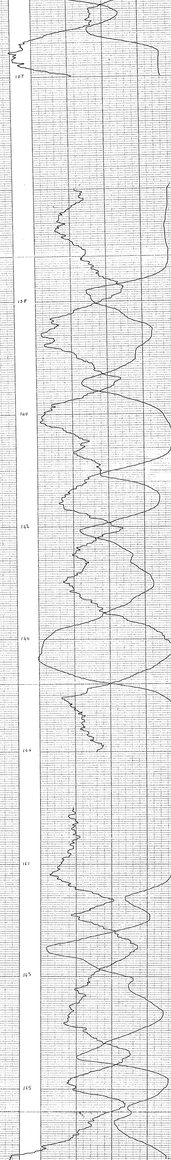
BPB COAL QUALITY LOG

DEPTH	GAMMA RAY
	COAL BULK DENSITY

HOLE SIZE CORRECTION DATA

0	12
0	12
0	12
0	12

API	API	0
1000	0	



1000	0	
API	API	0

	COAL BULK DENSITY
DEPTH	GAMMA RAY

BPB

BOREHOLE: ESSO (MONTEREI) — AREA: FRASER CREEK
CLIENT: ESSO (MONTEREI) — COUNTRY: CANADA

COAL QUALITY LOG

DIPMETER ANALYSIS

523

CLIENT ESSO MINERALS CANADA
BOREHOLE EMC 81-3
AREA FALLING CREEK
COUNTRY CANADA

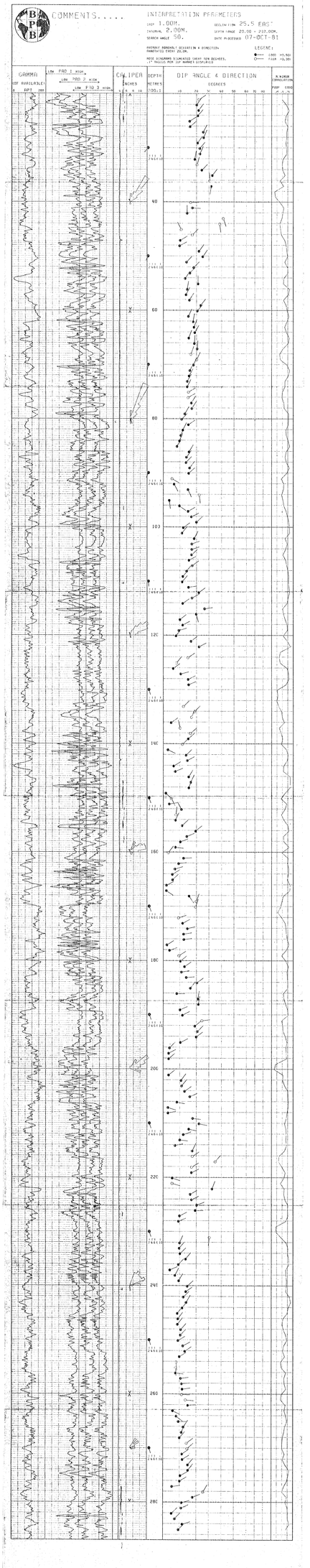
COMMENTS.....

INTERPRETATION PARAMETERS
SIP 1.00M.
INTERVAL 2.00M.
SEARCH ANGLE 50.
DECLINATION 25.5 EAST
DEPTH RANGE 20.00 - 237.00M.
DATE PROCESSED 07-OCT-81

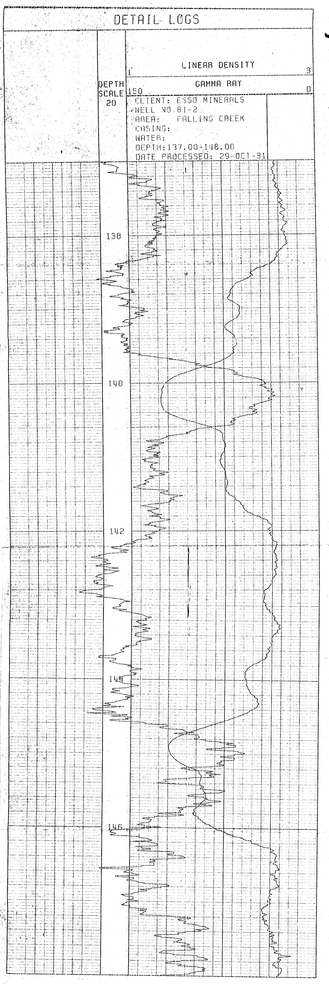
AVERAGE BOREHOLE DEVIATION & DIRECTION
PLOTTED EVERY 20.0M.

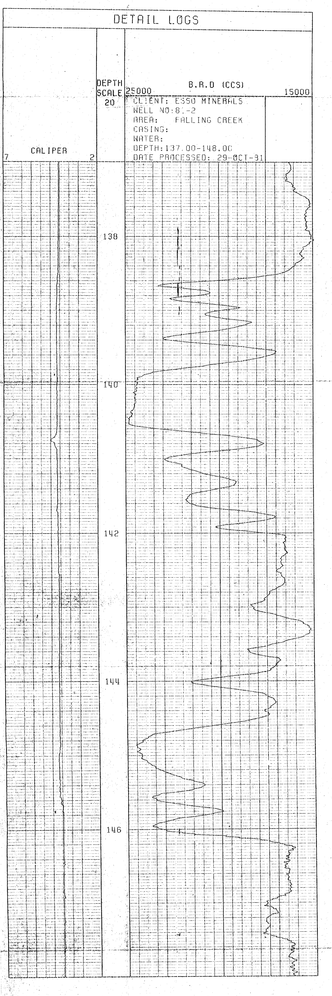
NOTE DIPMETER SLOWNESS THAT HAS DEGREES, 17 TRACES PER DIP MARKER DISPLAYED

LEGEND:
CORR +0.50
FLAG +0.30



523


DETAIL LOGS
LINEAR DENSITY
1
3
GAMMA RAY
150
0
DEPTH SCALE 20
CLIENT: ESSO MINERALS
WELL NO.81-2
AREA: FALLING CREEK
CASING:
WATER:
DEPTH:137.00-148.00
DATE PROCESSED: 29-OCT-81
138
140
142
144
146


DETAIL LOGS
DEPTH SCALE 20
B.R.D (CCS)
25000
15000
CLIENT: ESSO MINERALS
WELL NO:81-2
AREA: FALLING CREEK
CASING:
WATER:
DEPTH:137.00-148.00
DATE PROCESSED: 29-OCT-81
CALIPER
7
2
138
140
142
144
146

DIPMETER ANALYSIS

523

CLIENT: ESSO MINERALS CANADA
BOREHOLE: EMC 81-1
AREA: FALLING CREEK
COUNTRY: CANADA

COMMENTS.....

INTERPRETATION PARAMETERS
TRP 1.00M. DECLINATION 25.5 EAST
INTERVAL 2.00M. DEPTH RANGE 5.00 - 203.00M.
SEARCH ANGLE 50. DATE PROCESSED 07-OCT-81

INFERRED BOREHOLE DEVIATION & DIRECTION
INFERENCE EVERY 20.0M.

NOTE BLANKING RECTANGLES INDICATE DEGREES, 1" MAGNA PER 10" HORIZ DISPLAYED

LEGEND:
SDBG >0.50°
FOR >0.50°

GAMMA (API UNITS) 0 - 200
LOW PRO 1 HIGH
LOW PRO 2 HIGH
LOW F PRO 3 HIGH

CALIPER INCHES 6 - 16

DEPTH METRES 1:200

DIP ANGLE & DIRECTION DEGREES 10 20 30 40 50 60 70 80

HIGHER CONFIDENCE FOR COND