EVANS CREEK
COAL PROJECT

GEOLOGICAL REPORT
1988

GEOLOGICAL REPORT
APPENDIX I

1:50 000 MAPS

1:10 000 MAPS

1:10 000 CROSS - SECTIONS

749

EVANS CREEK COAL PROJECT

GEOLOGICAL REPORT

1988

GULF CANADA RESOURCES LIMITED

COAL DIVISION

749

EVANS CREEK COAL PROJECT GEOLOGICAL REPORT

1988

Coal Project Licence Numbers

7790 - 7821

8325 - 8330

8333 - 8335

8338 - 8346

OPEN FILE

CONFIDENTIAL

Cassiar Land District

NTS Map Number 104A

Latitudes Between 56° 47' and 56° 59'

Longitudes Between 128° 9' and 128° 28'

GULF CANADA RESOURCES LIMITED

April, 1989

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B Description of Work by Licence

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E 1988 Fossil Samples

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G 1:500 000 Northwestern British Columbia Map

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Appendix I 1:50 000 Map

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1:10 000 Geological Cross-sections

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1:50 000 Maps
1:10 000 Geology Maps and Cross-sections

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2500S	EVC2500S
5000S	EVC5000S
000N	EVC000N
2500N	EVC2500N
7500N	EVC7500N

1.0 SUMMARY

Gulf Canada Resources Limited's Evans Creek Coal Project is located in the Bowser Basin of northwestern British Columbia, approximately 150 kilometres northeast of Stewart. The property consists of 50 crown coal licences totalling 12 319 hectares of land.

Exploration activity on the property during 1988 comprised of geologic mapping at a scale of 1:10 000, trenching and sampling of observed coal seams and measurement of five stratigraphic sections.

The sediments underlying the property have been subdivided into the following four sequences: the Panorama, Groundhog, Malloch, and Devils Claw, in ascending order. These sequences range in age from Upper Jurassic to Lower Cretaceous. The Groundhog Sequence is the main coal-bearing unit and is interpreted to have a thickness of 600 metres, although no complete measurable sections are locally present.

Structurally, the area is dominated by northwest to southeasterly trending folds. Subtle plunge reversals extend over relatively short distances. Thrust faulting parallels folding on the property with minor vertical displacement.

Speculative resources totalling 1 538 million tonnes have been calculated for the Evans Creek property. Subsurface investigation has been recommended for the Jackson Flats area and the north slope of Mt. Jackson. The thick overburden layer makes surface evaluation of the coal-bearing sequence impossible in these areas.

2.0 RECOMMENDATIONS

The following recommendations are proposed, based on the information accumulated during 1988 and previous field seasons.

1. Diamond drilling in the coal-bearing Jackson Flats and north slope of Mt. Jackson to establish resources in an area where overburden prevents surface evaluation. These drill holes might provide enough data to allow reliable seam correlations.

2. Drilling in the northern part of the property to further delineate the 3.54 metre seam in TRC83013, as recommended in 1984.

3. Further evaluation of current licence position.

3.0 INTRODUCTION

3.1 Location

The Evans Creek coal licences are situated in northcentral British Columbia approximately 890 kilometres north of Vancouver, 150 kilometres northeast of Stewart, and 490 kilometres northwest of Prince George (Figure 3.1).

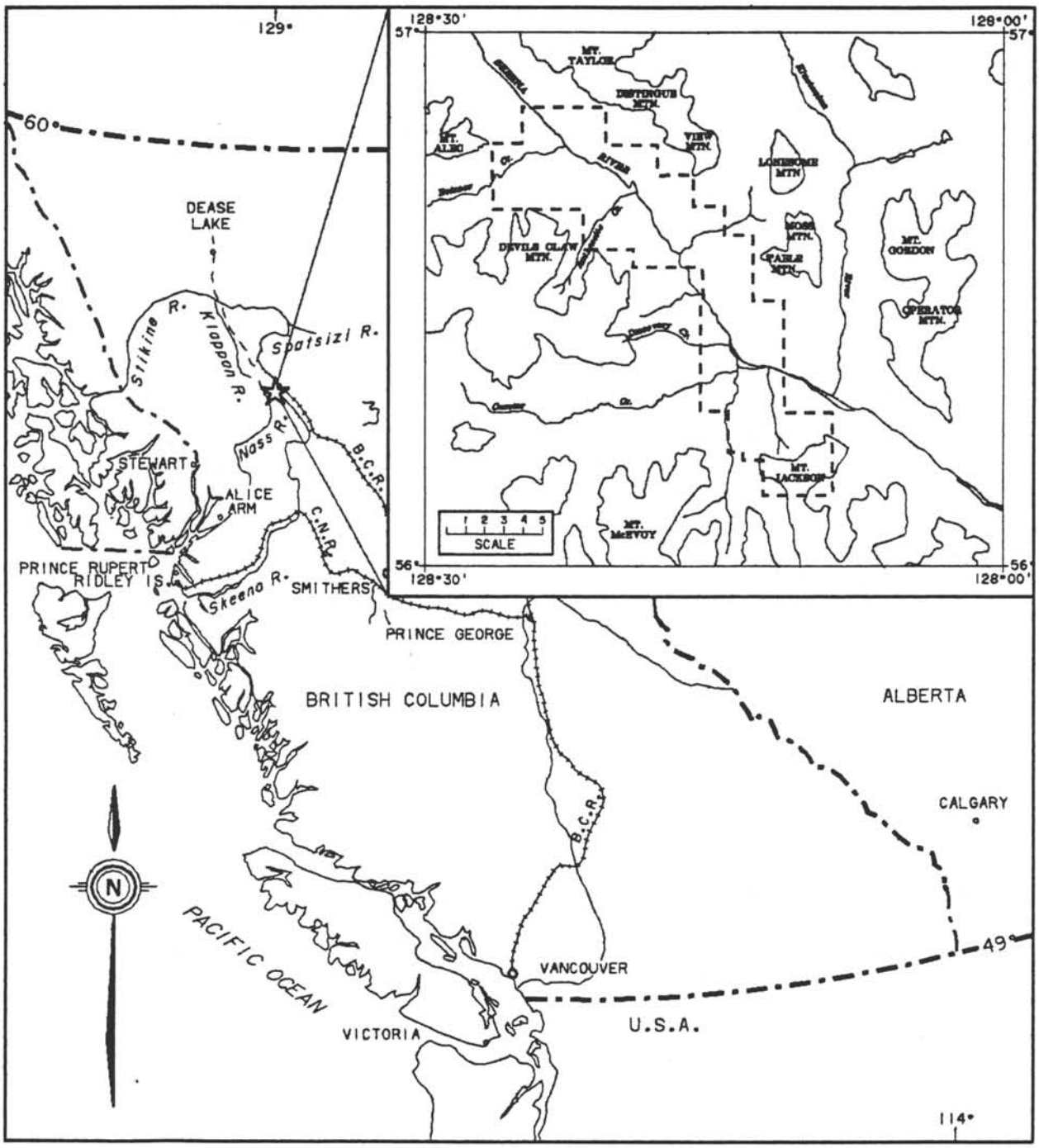
Geographically the coal licences lie near the northern extremity of the Skeena Mountains between 56° 47" and 56° 59" north latitude, and 128° 9" and 128° 28" west longitude. The property is transected by the Skeena River.

The nearest accessible settlement via roadway (provided repairs are made to portions of the existing route) is the native community of Iskut (population 500) located 195 kilometres to the northwest, on the Stewart-Cassiar Highway. The nearest community by air is the town of Meziadin located 110 kilometers to the southwest.

3.2 Access

The Evans Creek property straddles the partially completed British Columbia Railway line between Prince George and Dease Lake (Figure 3.2). Prior to cessation of work on the construction of the line, steel was laid to within 30 kilometres of the southern property boundary.

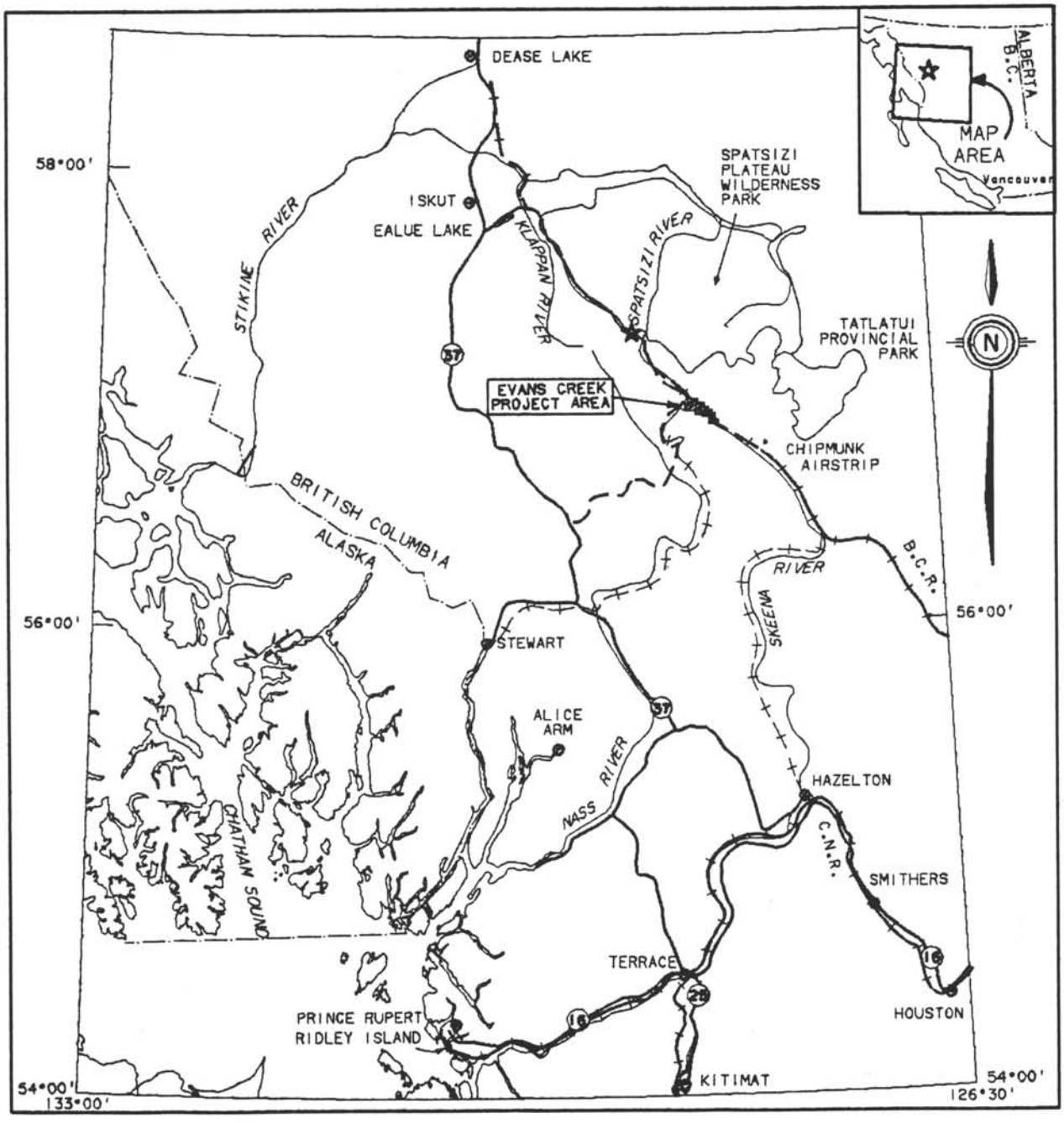
FIGURE 3.1
EVANS CREEK COAL PROJECT
LOCATION MAP



----- EVANS CREEK LICENCE AREA

GULF CANADA RESOURCES INC.
MARCH, 1989

FIGURE 3.2
EVANS CREEK COAL PROJECT
PROPERTY ACCESS



LEGEND

- ROAD ACCESS
- PROPOSED ROAD ACCESS
- EXISTING RAILWAY
- EXISTING RAILWAY SUBGRADE
- POSSIBLE RAILWAY ROUTES
- ☆ MT. KLAPPAN CAMP LOCATION

SCALE

0 20 40 60 80 100 km

GULF CANADA RESOURCES INC.
MAY, 1989

Gulf

MAP:[205,60]850129003.LOC 05/08/89 DEJ

The BCR subgrade, which provides access from the northwest, passes through the Evans Creek Property but is incomplete within the property area. This incomplete 24 kilometre stretch does, however, contain rough access roads. Although repairs are necessary due to washouts, once repaired, the subgrade could provide road access into the property. At present the property is accessible by helicopter or small fixed-wing aircraft which can land at the airstrip at the confluence of the Skeena and Kluatantan rivers.

3.3 Property Description

The Evans Creek property comprises 50 coal licences totalling 12,319 hectares of land. The original 32 licences were applied for on February 5, 1984. On July 8, 1988 a further 18 licences were acquired (Figure 3.3). A legal description of the licences is included in Appendix A and they are shown on the Coal Licence Map in Appendix I.

Portions of the 1988 licence acquisitions are being turned back to the Crown where they overlie the 1986 Coal Reserve in the Currier Creek Valley.

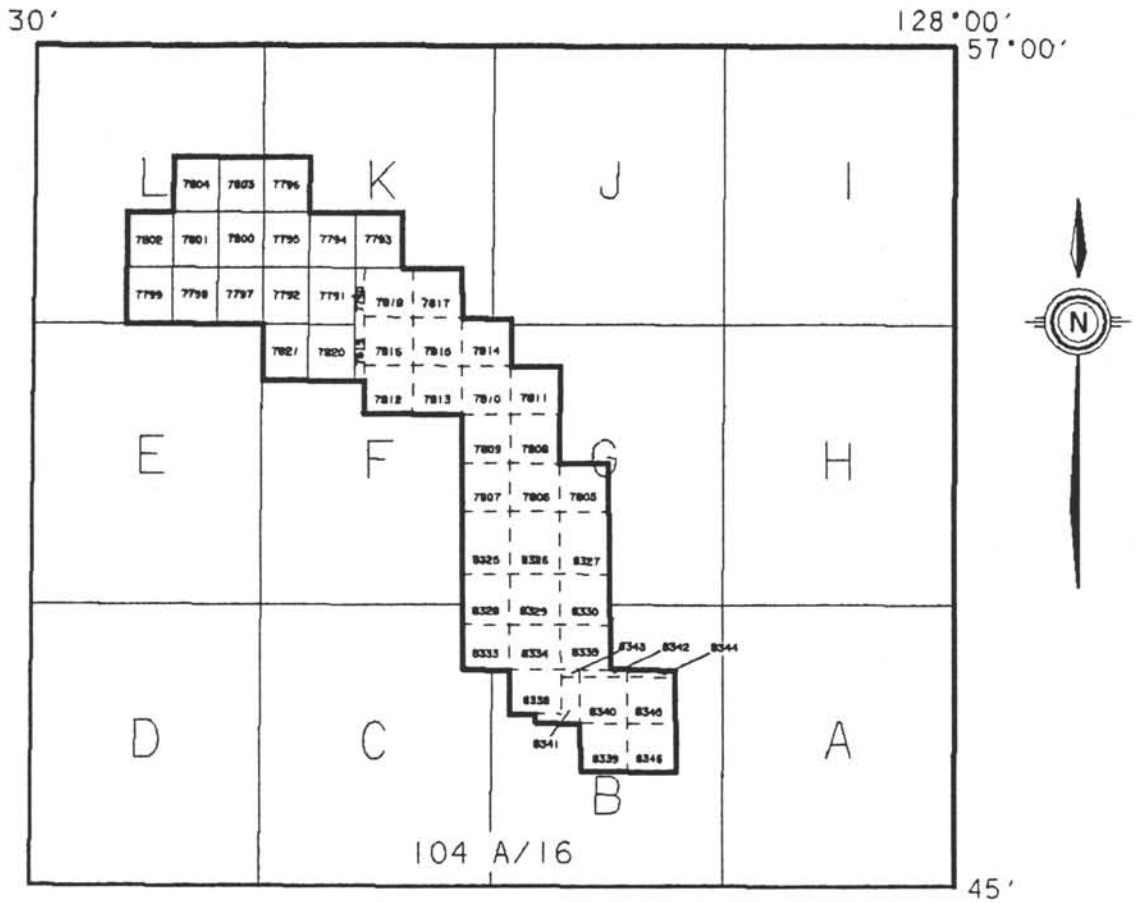
3.4 Ownership

Gulf Canada Resources Limited, wholly owns the coal licences comprising the Evans Creek property.

FIGURE 3.3

EVANS CREEK COAL PROPERTY

LICENCES



LEGEND

LICENCE AREA

SCALE

0 5 MILES

0 5 10 km

GULF CANADA RESOURCES INC.
11/29/88

3.5 Property Geography and Biophysical Environment

The Evans Creek property is transected by the Skeena River and lies predominantly within the Skeena River Valley. This area is near the northern extremity of the Skeena Mountains physiographic region and is dominated by mountainous terrain and broad northwest to southeasterly trending valleys.

Elevations on the property range from 884 metres in the Skeena River Valley to 1770 metres at Mt. Jackson. The tree line in the area is at approximately 1,500 metres above sea level. The river valley is nearly completely covered by coniferous forest, with lesser areas of grasses, shrubs, meadows, and bogs. The higher elevations are characterized by alpine tundra.

The area lies in the Northern and Central Plateau and Mountain climatic zone. Precipitation averages 300 to 400 mm per year with mean daily temperatures comparable to Fort Nelson and Prince George. This information is derived from a weather station located 50 kilometres northwest of the property in the Mount Klappan Coal Project Area.

4.0 EXPLORATION HISTORY

4.1 Previous Exploration Work

Since the first published description of coal in the Groundhog coalfield in 1900, numerous companies and individuals have acquired coal licences, mapped, trenched and excavated adits in the Evans Creek area.

A joint venture program by W. Tompson, D. Jenkins and M. Roper in 1970 represented the first diamond drilling program in the Groundhog. Six holes were drilled and intersected a large number of seams, though no BCA or geophysical data was accumulated.

Imperial Metals Corporation completed six diamond drill holes in 1981. No formal report or coal analyses were completed though descriptive logs, strip logs and geophysical logs were included.

Suncor Inc. Coal Group acquired licences and began exploration in the Groundhog coalfield in 1982. In 1985 they conducted a detailed mapping and trenching program on their Mt. Jackson property.

4.2 Gulf's Previous Exploration Work

During March of 1983, a Gulf in-house evaluation of the Groundhog Coalfield delineated an area of potential interest along the Skeena River Valley. Licences were acquired on February 5, 1984 and during the summer of that same year a mapping and trenching program was completed. Reconnaissance of the area continued in 1985.

5.0 1988 EXPLORATION PROGRAM

5.1 Program Objectives

The objective of the 1988 Evans Creek exploration program was to evaluate 18 newly acquired coal licences south of the existing property. The evaluation consisted of:

1. geological mapping at a scale of 1:10 000;
2. delineation of coal outcrop by way of trenching and surface tracing;
3. determination of quality of coal seams;
4. determination of the potential for surface mineable coal.

5.2 Summary of Exploration

The majority of the 1988 Evans Creek exploration activity occurred over 10 field days between July 25 and August 10. Mapping at a scale of 1:10 000, trenching and measurement of sections was carried out by two teams of two based at the Mt. Klappan Anthracite Project 50 kilometres to the northwest. Appendix B outlines the distribution of work by licence. All data points are shown on the Trench, Drill Hole and Measured Section Location Map contained in Appendix I.

5.3 Cartography

Topographic base maps at a 1:10 000 scale were produced from 1:60 000 British Columbia Government air photos flown in 1982.

5.4 Geological Mapping

The geological mapping program concentrated on Mt. Jackson, where the most outcrop is available. Adjacent ridges and selected creek channels were also mapped. Field data was plotted on 1:10 000 cross-sections. Both maps and cross-sections are contained in Appendix I.

5.5 Trenching

Twenty-two trenches were excavated and logged during the exploration program, comprising a total length of 42.68 metres. Seventeen trenches were sampled for coal quality analyses and nine of those were tested for vitrinite reflectance. Trench data and associated coal quality analyses are presented in Appendix C. A trench summary table is presented in section 6.2.4 of this report.

5.6 Measured Sections

Five outcrop sections totalling 834 m in length were measured on the south and southeast cliff faces of Mt. Jackson. The thicker seams were trenched and one grab sample was taken from a seam which was not formally trenched due to time constraints. Measured section data is presented in Appendix D.

5.7 Data Management

All trench and measured section data was entered into an IBM personal computer at the Mt. Klappan field camp and then uploaded

to Gulf's main coal data base from which stratigraphic logs and seam detail diagrams were generated.

5.8 Reclamation

Very minor environmental disturbance resulted from the 1988 Evans Creek exploration program in the form of hand trenching. No mechanical work was undertaken.

5.9 Project Management and Contractors

The following personnel contributed to the exploration in the Evans Creek Project area.

E. Swanbergson	Co-ordinator
J. Innis	Senior Geologist
S. Lee	Geologist
L. Savoie	Geologist
A. Ledda	Geologist
D. Willis	Geologist
J. Wallace	Geologist
G. Murray	Assistant Geologist
L. Kraus	Assistant Geologist
K. Etmanski	Geological Assistant
A. Penman	Camp Manager
A. Sali	Administrator
R. Aiello	Field Accountant/Alternate Camp Manager
R. Quock	Computer Operator
R. Bonang	Cook

D. Ehni	First Aid Attendant
S. Wiebe	First Aid Attendant
T. Bugg	Helicopter Pilot
D. Small	Helicopter Pilot
R. Ingram	Helicopter Pilot
C. Ireland	Secretary

The following is a list of service companies and suppliers used during the 1988 Evans Creek exploration program.

Central Mountain Air Services Ltd.	Smithers, B.C.
David E. Pearson & Associates Ltd.	Victoria, B.C.
Loring Laboratories	Calgary, Alberta
Neville Crosby Inc.	Vancouver, B.C.
Northern Mountain Helicopters Inc.	Prince George, B.C.
Ribtor Sales	Calgary, Alberta
Starr Industries Ltd.	Fort St. John, B.C.
Totem Outdoor Outfitters Ltd.	Calgary, Alberta
Westcan Electronic Services Ltd.	Calgary, Alberta

6.0 GEOLOGY

6.1 Introduction

The Evans Creek Coal Property lies within the Bowser Basin in northcentral British Columbia. The Bowser Basin sediments are of Upper Jurassic to Lower Cretaceous age and have undergone two stages of deformation beginning in the Late Cretaceous. The initial and dominant compression was in a northeast-southwest direction. The second event was normal to the initial deformation.

The 1988 Evans Creek exploration program involved mapping, hand trenching and detailed measurement of sections. Coal quality analysis was performed on a number of coal samples.

6.2 Evans Creek Property Geology

6.2.1 Stratigraphy

The Evans Creek Coal Property is located in the central Bowser Basin. The sediments in this part of the basin have been divided into four units (in ascending order): the Panorama, Groundhog, Malloch and Devils Claw, which range in age from Upper Jurassic to Lower Cretaceous (Figure 6.1).

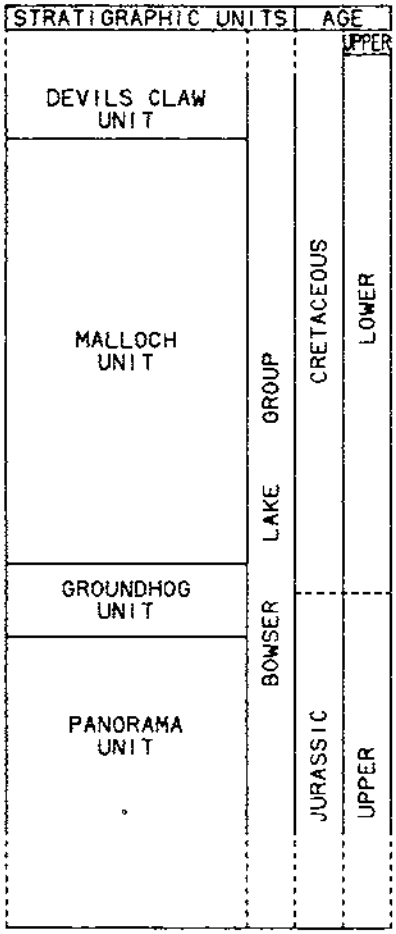
6.2.1.1 Panorama Unit

The lowermost unit, the Panorama overlies the volcanogenic rocks of the Stikine Terrane.

FIGURE 6.1

EVANS CREEK COAL PROJECT

STRATIGRAPHIC COLUMN



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MARCH, 1989

Although the complete sequence has not been seen, it is estimated to be at least 1,500 metres thick.

Lithologically, the Panorama consists of thick, coarsening upward sequences (CUS) of medium to thickly bedded mudstones grading to fine grained sandstones. Rare conglomerate lenses of limited lateral extent are seen. Sedimentary structures are very limited in the lower part of the unit.

The upper Panorama was seen on Mt. Jackson in two measured sections totalling 260 metres. Thinly bedded coarsening upward cycles of mudstone to medium grained argillaceous sandstone are present, as seen in the lower Panorama. The highest section, however, is much sandier and sedimentary structures, such as cross-bedding, rip-up clasts, load casts and especially ripple marks are more prevalent.

The Panorama is interpreted to represent a single marine regression from an open marine to a sand dominated coastal environment.

6.2.1.2 Groundhog Unit

The Groundhog unit conformably overlies the Panorama. In the northeast part of the property an oyster band in orange weathered siltstone marks the top of the Panorama unit. This is not a useful marker on Mt. Jackson because similar beds are noted well

within the Groundhog unit. A more consistent indicator of the transition from Panorama to Groundhog is the presence of better developed coal seams.

Thin bedded coarsening upward sequences of mudstone, siltstone and fine to medium grained argillaceous sandstone are often capped by a coal seam. The siltstone and sandstone tend to be weathered orange-brown. Sandstone becomes more predominant upwards in the unit. Occasional chert pebble conglomerates occur and extend laterally to a maximum of 20 metres, although most are much less extensive. Rip-up clasts of siltstone or mudstone are quite prevalent while ripple marks and cross-bedding are only occasionally seen.

Deposition of the Groundhog unit occurred in a lagoonal type environment. Numerous small marine transgressions occurred resulting in the interlayering of marine deposits and coal. Toward the top of the unit the marine influence lessens and the sediments take on a coastal plain character.

6.2.1.3 Malloch Unit

The Malloch shares a gradational contact with the underlying Groundhog. The few coal seams in the lower Malloch are poorly developed.

In 1985 a proposal to divide the Malloch into three sub-units was put forth in the Gulf Regional Exploration Report based on mapping the Evans Creek and nearby Panorama properties. The sub-units in ascending order are: Anthony, Buckham and Geoffrey.

The Anthony represents the gradational zone from the Groundhog unit, with finely laminated, fining upward sequences (FUS) of mudstone, siltstone and occasional fine grained sandstone. Sporadic coal seams are very thin (less than 0.5 metres). Although the sub-unit consists of individual fining upward sequences, the overall trend of the Anthony coarsens upward with sandstones most prevalent in its upper half.

The Buckham forms a conformable contact with the Anthony. It represents a marine transgression. The sediments consist of fining upward sequences of medium grained cross-bedded sandstone to fissile siltstone. Bivalves and belemnites are found on bedding planes.

The sub-unit outcrops on the top of Venture Ridge (south of Mt. Jackson). The Anthony transition zone is interpreted to be quite thin and the contact with the Groundhog occurs on this ridge. The Buckham has only been seen is the southern part of Evans Creek

and in Panorama. It is probable that the marine transgression was limited in extent.

The uppermost sub-unit, the Geoffrey, conformably overlies the Buckham and, in its absence, the Anthony sub-unit. Overall, the unit coarsens upwards but fining upward sequences with thinly bedded, medium grained, cross-bedded sandstone giving way to siltstone and mudstone are seen on a small scale. Channel sandstone and conglomerate occur throughout the unit but become more prevalent upwards. The Geoffrey is not present in the southern Evans Creek area but was described in 1985 from Devils Claw Mountain.

6.2.1.4 Devils Claw Unit

The Devils Claw unit lies conformably above the Malloch and is well exposed on the mountain from whence its name is derived. The base of the unit has been chosen to be the lowermost massive conglomerate greater than ten metres in thickness.

The Devils Claw consists of thick, massive, clast-supported conglomerates with coarse grained sandstone and matrix supported conglomerate interbeds. Occasional thin beds of dark mudstone along with poorly developed coal seams are present towards the bottom of the unit. Rip-up blocks have been seen in the basal portions of some conglomerate beds.

The Devils Claw represents an alluvial fan deposit. The lower sands and conglomerates have undergone redistribution by fluvial and coastal processes while the upper conglomerates are braided stream deposits.

6.2.2 Structure

The sediments of the Evans Creek area have undergone two phases of non-coaxial stresses of differing intensities.

The initial deformational event (F1) was the most significant, a northeast-southwest compression resulting in northwest-southeast trending fold axes. The dominant structural feature in the area, the Beirnes Synclinorium resulted from this initial phase of deformation. It is a doubly plunging synclinorium (plunging north in the Evans Creek area) which is clearly visible in the gentle dips of the competent Devils Claw unit. In the less complete Groundhog and Malloch units the beds are tightly folded and occasionally overturned with axes dipping towards the Beirnes synclinorium axis (southwestward on the Evans Creek property).

Thrusting related to F1 is more predominant in southern Evans Creek than elsewhere on the property. Thrusting seen on the south face of Mt. Jackson was limited to displacements of tens of metres.

Cleavage, related to F1 is well developed in fine grained lithologies near the fold axes.

The second period of deformation (F2) resulted from a northwest-southeast compression. The imprint of F2, a broad open type of folding, is visible as a series of plunge reversals in the F1 folds.

F2 thrusts are generally flat lying and related to the hanging wall of drag folds. Displacement tends to be along bedding surfaces (Bustin and Moffat, 1983).

6.2.3 Flora Macrofossils and Fossil Fauna

During the 1988 field season 21 specimens were sampled and/or identified from 13 sites during routine traverses. The fossil fauna and flora have aided in the interpretation of depositional environments.

6.2.3.1 Fossil Evidence for Stratigraphic Age

The fossil collection Gulf has obtained from the Evans Creek property is not large enough for stratigraphic age determinations, but work done previously on the Mt. Klappan property to the north, indicates a late Jurassic to early Cretaceous age for the coal-bearing and associated units of the central to northern Bowser Basin.

6.2.3.2 Fossil Distribution

The fossil trends within the units exposed on the Evans Creek property are based on the 1988

fossil collection and on trends previously noted in the Evans Creek area. A list of the 1988 fossil finds is located in Appendix E and the sites are shown on the Fossil Location Map in Appendix I.

The Panorama unit contains an abundance of bivalves and rare belemnites. Although most of the bivalves have not been identified, the marine species Buchia, Oxytonna and Eopecten (Bustin and Moffat, 1983) are represented.

The fossil assemblage of the Groundhog unit naturally varies upwards as the marine influence decreases. There are numerous zones of marine bivalves, such as Buchia and possible Staffinella, Hypoxytoma and Herogina and a possible ammonite specimen in the lower Groundhog. Plant fossils, such as Podozamites sp., Nilssonia sp., Pterophyllum sp. and Cladophlebis virginiensis are preserved in the middle to upper Groundhog. Although they are not as abundant as seen in the Klappan unit to the north, occasional bedding planes are profuse with plant fossils.

Numerous well preserved plant fossils are present in the lower Malloch (Anthony sub-unit), often in the vicinity of thin coal seams. Some of the common species are Cladophlebis virginiensis fisheri, Czekanowskia rigida, Nilssonia nigracollensis and Podozamites lanceolatus.

The marine transgression of the Buckham sub-unit resulted in the deposition of numerous marine bivalves and occasional belemnites within bedding planes. Plant fragments are found in some of the finer grained lithologies.

Although most of the plant fossils found in the bedding planes of the Geoffrey sub-unit and very broken, the fine grained lithologies of the upper 50 to 70 metres contain numerous well preserved plants, including Nilssonia canadensis, Czekanowskia rigida and Podozamites lanceolatus.

The Devils Claw conglomerates lack fossils but occasional fine grained interbeds contain plant fossils such as Nilssonia canadensis, Podozamites lanceolatus and Czekanowskia rigida.

6.2.4 Coal Seam Development

The main coal-bearing unit on the Evans Creek Property is the Groundhog unit. Twenty-two trenches were excavated in the southern part of the Evans Creek area during the 1988 field season. This, with the 18 trenches excavated during 1983 and 1984, makes a total of 40 trenches dug on and around the Evans Creek Property. Table 6.1 summarizes the trenching undertaken in Evans Creek in 1988.

Coal quality analysis was done on 17 of the 1988 trenches, 5 were not sampled because of intense weathering or

TABLE 6.1

EVANS CREEK AREA TRENCH SUMMARY

TRENCH	LOCATION	UNIT	C/C+R	SAMPLE ANALYSIS
88401	MT JACKSON	GROUNDHOG	0.48/1.18	PSC
88402	MT JACKSON	GROUNDHOG	0.70/1.36	PSC VR
88403	MT JACKSON	GROUNDHOG	0.71/0.77	PSC VR
88404	MT JACKSON	GROUNDHOG	0.48/0.57	PSC
88405	MT JACKSON	GROUNDHOG	0.81/1.18	-
88406	MT JACKSON	GROUNDHOG	0.45/1.40	PSC
88407	MT JACKSON	GROUNDHOG	0.39/0.44	PSC
88408	MT JACKSON	GROUNDHOG	0.85/0.85	PSC
88409	MT JACKSON	GROUNDHOG	0.30/0.30	PSC
88410	MT JACKSON	GROUNDHOG	0.43/0.43	PSC VR
88411	MT JACKSON	GROUNDHOG	0.90/1.05	-
88412	MT JACKSON	GROUNDHOG	0.84/1.22	PSC VR*
88413	MT JACKSON	GROUNDHOG	0.39/0.45	PSC VR
88414	MT JACKSON	GROUNDHOG	0.84/1.22	PSC VR
88415	VENTURE RIDGE	GROUNDHOG	0.39/0.45	-
88416	DISCOVERY CK	GROUNDHOG	1.62/2.01	PSC VR
88417	GRIZZLY GULCH	GROUNDHOG	1.49/1.90	PSC VR*
88418	GRIZZLY GULCH	GROUNDHOG	0.43/0.56	PSC
88419	GRIZZLY GULCH	GROUNDHOG	1.06/1.40	PSC
88420	GRIZZLY GULCH	GROUNDHOG	0.56/0.56	PSC VR
88421	GRIZZLY GULCH	GROUNDHOG	0.47/1.25	-
88422	GRIZZLY GULCH	GROUNDHOG	0.26/0.26	-

PSC Proximate, Sulphur and Gross Calorific Analysis
VR Vitrinite Reflectance

* Sample highly oxidized making it difficult to obtain representative reflectances.

thin seam development. Vitrinite reflectance was determined for 9 samples.

Twelve drill holes were drilled in the Evans Creek area prior to Gulf's acquisition of the coal licences. The maximum coal seam thickness intersected in these holes is 2.80 metres. Correlation between holes has not been possible because of the limited number of data points over such a large area.

The Groundhog coal seams are thinner than the Klappan seams to the north and the average ash content is higher.

6.2.4.1 Groundhog Coal Seams

Two-thirds of the trenching done in 1988 on the Evans Creek property took place on Mt. Jackson. Seam tracing between trenches is very limited due to the thick and extensive overburden.

Three Groundhog measured sections were undertaken on the south facing cliffs of Mt. Jackson. Nine seams of greater than 0.5 metres thickness were found within these sections for a total coal thickness of 10.13 metres and an average seam thickness of 0.88 metres. Trenched seams on the north slopes of the mountain could not be correlated with the measured section seams, but the northern seams are judged to be equivalent to, or higher in section than, those on the

south cliff. The strata near TRC88413 is more thickly bedded, the sands are cleaner, small scale ripple marks and load casts are more prevalent and there is a lack of bivalves.

The coal sequence exposed on Discovery Creek (west of the property) is within the upper Groundhog unit. The overall sequence is coarser and slightly more thickly bedded than that exposed on Mt. Jackson. The best seam outcrop (TRC88416) has a coal to coal plus rock ratio of 1.62/2.01 metres, the ash and sulphur content is low and the visual log indicates 0.94 metres of C-1 to C-2 coal. The seam is intersected in the 1970 Quintana drill hole number 2, located within 100 metres of the seam outcrop. In the drill hole the seam is 1.89 metres thick and of comparable coal quality to that determined from the trench sample.

Six seams were trenched along Grizzly Gulch on Pyramid Bluff, northeast of Mt. Jackson and east of the property. These seams comprise a total coal thickness of 5.93 metres with an average thickness of 0.99 metres. The two vitrinite reflectance tests from Grizzly Gulch are high for the Evans Creek area with the highest being 6.37 $\bar{R}_o$ max%. These seams have not been traced any distance because of thick overburden.

6.2.4.2 Malloch Coal Seams

Coal seams in the lower Malloch are thin, less than 0.5 metres and of poor quality, often composed mostly of carbonaceous mudstone. The thin seams seen on Venture Ridge are in the gradational zone from Groundhog to Malloch.

7.0 RESOURCES

7.1 Summary

Coal resources of the Evans Creek Coal Property are in the speculative resources category and are established at 1,538 million tonnes as of the 1988 exploration season. These resources can be divided into 1,054 million tonnes for licences acquired in 1984 and 484 million tonnes for the licences acquired in 1988.

The procedures undertaken in resource calculations and the parameters used to classify the coal resources are outlined in Section 7.2.

7.2 Procedures and Parameters

7.2.1 Introduction

In-situ coal resources are defined as the in-place coal (coal and partings) that is contained in seams occurring within specified limits of thickness and depth from surface. Resources are further defined through classification into "measured", "indicated", "inferred", and "speculative" categories based on the existence and relative spacing of coal seam exploration data.

The procedures for the resource calculation include standard methods utilizing the surficial extent of the coal-bearing sequence and projection of data from the limited data sources as described in Section 7.2.2.

The parameters for resource categorization generally follow those set out for the Cordillera Region by Energy, Mines and Resources Canada in Report ER79-9: Coal Resources and Reserves of Canada.

7.2.2 Procedures

The required information to calculate speculative resources is the surface area of the coal-bearing zone, the cumulative thickness of mineable coal seams and the average specific gravity of the coal.

The surface area of the coal-bearing sequence was taken as the planimetered extent of the Groundhog unit within the Evans Creek coal licences as shown on the 1:50 000 geology map in Appendix I.

The cumulative coal seam thickness is based on the data from twelve 1970 and 1981 diamond drill holes in the Evans Creek vicinity, eight of which are on the Evans Creek Coal Property. Correlation between drill holes is not possible with present data. The average cumulative coal thickness over a 200 metre interval (approximately the greatest continuous Groundhog section encountered) was determined from the twelve drill holes. That value is 7.97 metres.

Measured section OTC88001 on the south face of Mt. Jackson, intersected seven seams for a cumulative thickness of 7.43 metres over 209 metres of section. Although these

seams cannot be correlated with those in the drill holes, the similarity in cumulative coal thickness over an equivalent stratigraphic thickness indicates it is reasonable to assume the average of the two thicknesses, 7.7 metres, represents the resource thickness throughout the Groundhog on the Evans Creek property. Of course, this will be an overestimate in areas where the Groundhog is substantially thinned by erosion, but it will be an underestimate in areas underlain by the full thickness of the Groundhog.

Float-sink analysis was performed on nine of the seams from the 1970 drill holes. This data was used to determine a representative specific gravity value of 1.85 tonnes/m^3 to use in the speculative resource calculations.

Calculation of the speculative resources is based on the following equation:

Tonnes of Coal = Surface Area x Thickness x Specific Gravity
(m^2) (m) (tonnes/m^3)

Calculation are shown in Appendix F.

7.2.3 Parameters

The minimum seam thickness used for the Evans Creek resource calculations is 0.5 metres and the seam must have a minimum coal percentage of 50%. The stratigraphic thickness over which the cumulative coal thickness is estimated is 200

metres, which is approximately the greatest continuous extent of Groundhog encountered to date.

Of the four resource categories used by Gulf, only the speculative category applies to the Evans Creek Coal Property. Parameters for this category are outlined below.

7.2.3.1 Speculative Resources

Speculative Resources include those resources which are calculated from a few scattered coal occurrences in areas of little or no exploration data where the coal-bearing sequence(s) is/are interpreted to exist. There is no maximum spacing in this category.

8.0 COAL QUALITY

8.1 Summary

Coal quality analysis for 1988 was based on hand trenched samples. Samples from 17 of the twenty-two 1988 trenches and one grab sample from OTC88005 were analyzed for proximate, sulphur and calorific values. Ten of those samples (including a grab sample) were also analyzed for vitrinite reflectance.

Coal quality analysis was undertaken by Loring Laboratories in Calgary and vitrinite reflectance determinations were conducted by David E. Pearson and Associates in Victoria.

8.2 Procedures and Parameters

Trenching was carried out on routine traverses when a significant seam was encountered, generally a seam of greater than 0.5 metres, though in some cases thinner seams within measured sections were trenched. The seam was excavated perpendicular to bedding, logged in detail and a channel sample was taken if the coal was relatively unweathered.

The results of all analyses are presented with the applicable trench or measured section data in Appendices C and D. The average analysis data for the 1988 samples is given in Table 8.1.

8.3 Discussion

Coal quality analysis is a useful tool in the evaluation of a

TABLE 8.1

EVANS CREEK COAL PROPERTY: 1988 AVERAGE COAL QUALITY ANALYSES SUMMARY

1988 DATA SOURCE	TOTAL MOISTURE (%)	RESIDUAL MOISTURE (%)	PROXIMATE ANALYSIS ASH (%)	VOLATILE MATTER (%)	FIXED CARBON (%)	SULPHUR (%)	GROSS CALORIFIC VALUE (MJ/kg)	(cal/g)
TRC88401	27.87	2.32	46.63	21.88	29.17	0.29	11.20	2677
TRC88402	21.87	2.69	56.92	16.09	24.30	0.16	9.51	2273
TRC88403	10.43	2.23	41.62	7.20	48.95	0.41	17.37	4152
TRC88404	18.54	3.33	34.11	13.87	48.69	0.28	18.01	4304
TRC88405	-	-	-	-	-	-	-	-
TRC88406	24.04	2.25	62.82	15.76	19.17	0.27	7.23	1728
TRC88407	26.45	2.63	51.03	18.55	27.79	0.15	10.36	2476
TRC88408	26.77	2.86	30.27	20.69	46.18	0.23	16.19	3870
TRC88409	10.27	1.38	37.12	6.74	54.76	0.40	16.60	3967
TRC88410	12.27	2.25	15.23	9.29	73.23	0.35	26.53	6341
TRC88411	-	-	-	-	-	-	-	-
TRC88412	31.18	2.03	33.80	23.62	40.55	0.27	14.41	3444
TRC88413	18.72	2.17	17.93	15.33	64.57	0.31	22.62	5406
TRC88414	14.32	2.57	34.94	12.59	49.90	0.41	18.40	4398
TRC88415	-	-	-	-	-	-	-	-
TRC88416	-	2.84	22.60	6.88	67.68	0.34	24.50	5856
TRC88417	28.97	2.42	59.17	16.20	22.21	0.14	8.14	1946
TRC88418	14.61	2.89	40.60	9.45	47.06	0.31	16.78	4011
TRC88419	28.88	2.42	46.67	20.31	30.60	0.20	10.29	2459
TRC88420	16.01	2.25	42.66	11.26	43.83	0.29	15.01	3587
TRC88421	-	-	-	-	-	-	-	-
TRC88422	-	-	-	-	-	-	-	-
OTC88001	-	-	-	-	-	-	-	-
OTC88002	-	-	-	-	-	-	-	-
OTC88003	-	-	-	-	-	-	-	-
OTC88004	-	-	-	-	-	-	-	-
OTC88005	12.35	2.10	47.70	7.39	42.81	0.23	15.65	3740
AVERAGE VALUES:	20.21	2.42	40.10	14.06	43.41	0.28	15.49	3702

coal property because the percentage ash, fixed carbon, volatiles and sulphur are deciding factors in the economic usefulness of a seam. Seam correlations can be aided by comparison of quality data, although seam quality can vary over short distances. Maximum vitrinite reflectance is an indicator of coal rank and is useful in determining the maturity of a given seam.

All the trench samples were weathered to varying degrees, which biased the quality data. High residual moisture and volatile content is indicative of weathering. The average total moisture and residual moisture for the samples is 20.21% and 2.42%, respectively. The average volatile content is 14.06% for the Evans Creek seam outcrop samples, whereas, drill core samples have less than 8% volatiles. This high percentage of moisture and volatiles results in artificially low values of fixed carbon and ash content.

The seams sampled in the southern Evans Creek area have a very low sulphur content with an average value of 0.28% and a range from 0.14 to 0.41%. The average sulphur value for all Evans Creek samples (1983, 1984 and 1985) is 0.47%.

The three most favourable seams of those trenched in 1988 are the Upper Discovery Creek seam and two seams on Mt. Jackson. Table 8.2 shows the quality analyses for these seams.

The Discovery Creek seam is the thickest uncovered during the 1988 season and has the highest gross calorific value as well as a high fixed carbon and low sulphur content. The two other seams are thinner and have slightly less favourable analyses but are still quite acceptable.

Work done to date in the northcentral portion of the Bowser Basin, although clustered in areas great distances apart, tends to indicate changes in coal quality as one moves southeasterly through that part of the basin. A general southeastward trend of increased vitrinite reflectance and, therefore, increased coal maturity is apparent. These southeastern seams, however, tend to have more rock splits, higher ash values, and conversely lower fixed carbon values than their northwestern counterparts, often resulting in lower gross calorific values. It should be noted, however, that moisture and ash content affect the calorific value of a sample, and that the high moisture content present in the Evans Creek weathered samples may have resulted in the lower calorific values in the southeast area.

TABLE 8.2

EVANS CREEK COAL PROPERTY: MOST PROMISING 1988 TRENCHES

1988 DATA SOURCE	COAL/ COAL+ROCK RATIO (m)	RESIDUAL MOISTURE (%)	PROXIMATE ANALYSIS ASH (%)	VOLATILE MATTER (%)	FIXED CARBON (%)	SULPHUR (%)	GROSS CALORIFIC VALUE (MJ/kg)	(cal/g)
TRC88403*	0.71/0.77	2.23	41.62	7.20	48.95	0.41	17.37	4152
TRC88404	0.48/0.57	3.33	34.11	13.87	48.69	0.28	18.01	4304
TRC88414*	0.84/1.22	2.57	34.94	12.59	49.90	0.41	18.40	4398
TRC88416	1.62/2.01	2.84	22.60	6.88	67.68	0.34	24.50	5856
AVERAGE VALUES:	0.91/1.14	2.74	33.32	10.14	53.81	0.36	19.57	4677

* - trenches which intersect the same seam.

9.0 REFERENCES

BUSTIN, R.M., and MOFFAT, I., 1983, Groundhog Coalfield, Central British Columbia: Reconnaissance Stratigraphy and Structure, Bulletin of Canadian Petroleum Geology, v. 31, pg. 231-245.

GULF CANADA RESOURCES LTD., 1985, Regional Exploration Program Geological Report.

APPENDIX A

EVANS CREEK COAL PROJECT LICENCES

APPENDIX A

EVANS CREEK COAL PROJECT LICENCES

1988

LICENCE	EFFECTIVE DATE	HECTARES	SERIES	BLOCK/LOT
7790	Feb. 5/84	49	104-A-16	K
7791	Feb. 5/84	283	104-A-16	K
7792	Feb. 5/84	283	104-A-16	K
7793	Feb. 5/84	283	104-A-16	K
7794	Feb. 5/84	283	104-A-16	K
7795	Feb. 5/84	283	104-A-16	K
7796	Feb. 5/84	283	104-A-16	K
7797	Feb. 5/84	283	104-A-16	L
7798	Feb. 5/84	283	104-A-16	L
7799	Feb. 5/84	283	104-A-16	L
7800	Feb. 5/84	283	104-A-16	L
7801	Feb. 5/84	283	104-A-16	L
7802	Feb. 5/84	283	104-A-16	L
7803	Feb. 5/84	283	104-A-16	L
7804	Feb. 5/84	283	104-A-16	L
7805	Feb. 5/84	265	104-A-16	998
7806	Feb. 5/84	265	104-A-16	999
7807	Feb. 5/84	265	104-A-16	141
7808	Feb. 5/84	265	104-A-16	2182
7809	Feb. 5/84	265	104-A-16	2183
7810	Feb. 5/84	265	104-A-16	2184
7811	Feb. 5/84	265	104-A-16	2185
7812	Feb. 5/84	265	104-A-16	129
7813	Feb. 5/84	265	104-A-16	130
7814	Feb. 5/84	265	104-A-16	2188
7815	Feb. 5/84	265	104-A-16	2189
7816	Feb. 5/84	265	104-A-16	2190
7817	Feb. 5/84	265	104-A-16	2192
7818	Feb. 5/84	265	104-A-16	2191
7819	Feb. 5/84	49	104-A-16	F
7820	Feb. 5/84	283	104-A-16	F
7821	Feb. 5/84	283	104-A-16	F
8325	July 8/88	264	104-A-16	140
8326	July 8/88	264	104-A-16	139
8327	July 8/88	264	104-A-16	138
8328	July 8/88	264	104-A-16	135
8329	July 8/88	264	104-A-16	136
8330	July 8/88	264	104-A-16	137
8333	July 8/88	264	104-A-16	989
8334	July 8/88	264	104-A-16	988
8335	July 8/88	264	104-A-16	987
8338	July 8/88	264	104-A-16	985
8339	July 8/88	284	104-A-16	B
8340	July 8/88	284	104-A-16	B
8341	July 8/88	176	104-A-16	B
8342	July 8/88	12	104-A-16	B
8343	July 8/88	7	104-A-16	B
8344	July 8/88	12	104-A-16	B
8345	July 8/88	284	104-A-16	B
8346	July 8/88	284	104-A-16	B

APPENDIX B

DISTRIBUTION OF WORK BY LICENCE

APPENDIX B

DISTRIBUTION OF WORK BY LICENCE

TRENCH	LICENCE
88401	8339
88402	8339
88403	off property
88404	off property
88405	8346
88406	8339
88407	8339
88408	8339
88409	8339
88410	8339
88411	8339
88412	8339
88413	8339
88414	off property
88415	off property
88416	off property
88417	off property
88418	off property
88419	off property
88420	off property
88421	off property
88422	off property

APPENDIX C

1988 TRENCH DATA AND COAL QUALITY

GULF CANADA CORPORATION - COAL DIVISION

12/JAN/89 PROJECT DATA SOURCE SUMMARY PAGE 1

DATA SOURCE	LOCATION NORTHING	LOCATION EASTING	ELEVATION	LENGTH	ANGLE	AZIMUTH	LOG TYPE
EVCXXTRC88401	6293955.00	549335.00	1641.0	0.3	80.0		
EVCXXTRC88402	6293933.80	549349.86	1650.0	0.6	64.0	140.0	
EVCXXTRC88403	6294215.00	548180.00	1643.0	1.0	25.0	355.0	
EVCXXTRC88404	6294200.00	548115.00	1600.0	1.0	39.0	352.0	
EVCXXTRC88405	6294625.00	549440.00	1660.0	1.5	28.0	179.0	
EVCXXTRC88406	6293950.00	549310.00	1684.0	2.9	10.0	170.0	
EVCXXTRC88407	6293940.00	549295.00	1664.2	3.1	30.0	34.0	
EVCXXTRC88408	6293915.00	549280.00	1653.5	2.0	42.0	282.0	
EVCXXTRC88409	6293920.00	549260.00	1613.9	1.2	36.0	298.0	
EVCXXTRC88410	6293895.00	549205.00	1603.3	1.0	66.0	280.0	
EVCXXTRC88411	6293840.00	549130.00	1568.0	0.6	60.0	280.0	
EVCXXTRC88412	6293650.00	550150.00	1786.0	2.8	8.0	140.0	
EVCXXTRC88413	6295040.00	549760.00	1558.0	0.8	0.0	100.0	
EVCXXTRC88414	6294380.00	548500.00	1570.0	2.0	25.0	155.0	
EVCXXTRC88415	6292895.00	549950.00	1673.4	1.4	37.0	65.0	
EVCXXTRC88416	6301615.00	541900.00	1323.0	0.3	60.0	264.0	

GULF CANADA CORPORATION - COAL DIVISION

12/JAN/89 PROJECT DATA SOURCE SUMMARY PAGE 2

DATA SOURCE	LOCATION NORTHING	LOCATION EASTING	ELEVATION	LENGTH	ANGLE	AZIMUTH	LOG TYPE
EVCXXTRC88417	6301030.00	555625.00	1695.0	4.3	30.0	250.0	
EVCXXTRC88418	6301215.00	555430.00	1666.0	1.6	32.0	185.0	
EVCXXTRC88419	6301115.00	555395.00	1640.0	3.0	22.0	292.0	
EVCXXTRC88420	6301095.00	555340.00	1603.0	1.6	36.0	120.0	
EVCXXTRC88421	6301265.00	555445.00	1684.0	3.4	30.0	190.0	
EVCXXTRC88422	6301165.00	555425.00	1646.0	2.1	30.0	180.0	

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88401 DATE - 11/14/88

- H I S T O R Y -

START DATE - 07/31/88
END DATE - 07/31/88

CONTRACTOR -
GEOLOGIST - WILLIS
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - EVANS CREEK. OTC88001, MOUNT JACKSON SOUTHWEST. C/
C+R = 0.48/1.18

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1641.00
ZONE - 9
NORTHING - 6293955.00
EASTING - 549335.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 0.30
INCLINATION - 80.0
AZIMUTH - 0.0

SIZE WIDTH - 1.5
SIZE HEIGHT - 0.5

ROOF STRIKE - 150
ROOF DIP - 25
ROOF DIR - N
FLOOR STRIKE - 136
FLOOR DIP - 78
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88401 SEAM : INTERVAL(M) : 1.50 – 1.67 ELEVATION(M) : 1641.0

GEOLOGIST : WILLIS SCALE: 1:40 DATE : JAN 13/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	1.50			0.17	100.0	8406	8406	0.17 / 0.00		2.32	66.63	21.88	29.17	0.29	11.20
	1.67							0.17							

gcri coal division	head	proj EVC	BLK XX	DS TRC88401	
sample id	08406	data type (real,boro,aver,calc)			REAL
split sample id	HD1	date analysed	__/__/__		
		analysis basis type (ad,db,ar,em)			AD
name of standard (astm,jis,din,bs,as,gost,iso)		ASTM			
top size (mm)	35.00				
surface moisture %	__.__	total sulphur %			0.29
total moisture %	27.87	phosphorous %			_.___
equilibrium moisture %	__.__	chlorine (ppm)			_____
		specific gravity			_.__
residual moisture %	2.32	fsi			__._
ash %	46.63	hgi			___._
volatile matter %	21.88	co2 %			__.__
fixed carbon %	29.17				
gross calorific value (mj/kg)	11.20				
net calorific value (mj/kg)	__.__				

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88401

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.50	1.50	*90			SANDSTONE	SLTY,FG,M.GY,VTHNB ROOF ROCK. WEATHERED SURFACE BUFF/ORNG. 150/25 N. MUDST INTERLAMS. VERY FISSIL E SS INTERVALS, MG.
	1.50	1.54	0.04	*90	08406		COAL	C-5,BLK WEATHERED; ABUNDANT THIN MUDST PARTINGS
	1.54	1.56	0.02	*90	08406		COAL	C-4,BLK WEATHERED.
	1.56	1.62	0.06	*90	08406		COAL	C-3,BLK WEATHERED; MINOR FE STAINING.
	1.62	1.64	0.02	*90	08406		COAL	C-3,BLK MINOR C-2 BANDS 2MM THICK; WEATHERED.
	1.64	1.67	0.03	*90	08406		COAL	C-4,BLK WEATHERED; MINOR C-2 BANDS 2MM THICK.
	1.67	2.37	0.70	*90			MUDSTONE	DK.GY,THNB FLOOR ROCK. WEATHERED BUFF COLOUR. ABUN DANT QTZ VEINS 2-3CM THICK.
	2.37	2.48	0.11	*90			COAL	C-5,BLK WEATHERED, MINOR FE STAINING.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88401

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.48	2.65	0.17	*90			COAL	C-3,BLK VERY WEATHERED.
	2.65	2.68	0.03	*90			COAL	C-5,BLK
	2.68	7.93	5.25	*90			SANDSTONE	SLTY,M,GY,THNB MS - BUFF?ORNG - LT GREY. BEDDING - 136 /78 DEGREE N. SLTST LENSES 1CM THICK x 10CM LONG.

* DENOTES MEASURED BCA

NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88402 DATE - 11/14/88

- H I S T O R Y -

START DATE - 07/31/88
END DATE - 07/31/88

CONTRACTOR -
GEOLOGIST - WILLIS
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - EVANS CREEK - OTC88001, MOUNT JACKSON SOUTHWEST. C
/C+R = 0.70/1.36

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1650.00
ZONE - 9
NORTHING - 6293945.00
EASTING - 549350.00

LICENCE/LEASE NUMBER -

LATITUDE - 564719
LONGITUDE - 1281132

- O R I E N T A T I O N -

LENGTH - 0.60
INCLINATION - 64.0
AZIMUTH - 140.0

SIZE WIDTH - 3.0
SIZE HEIGHT - 1.1

ROOF STRIKE - 136
ROOF DIP - 78
ROOF DIR - N
FLOOR STRIKE - 139
FLOOR DIP - 76
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION
COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88402 SEAM : INTERVAL(M) : 0.10 – 1.46 ELEVATION(M) : 1650.0

GEOLOGIST : WILLIS SCALE: 1:40 DATE : JAN 16/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.10															
			0.40													
				0.31	100.0	8407	8407	0.70/ 0.86		2.68	56.92	16.08	24.30	0.16	9.51	—
				0.20				1.36								
			0.16													
	1.46															

gcri coal division	head	proj	EVC	BLK	XX	DS	TRC88402

sample id	08407	data type (real,boro,aver,calc)	REAL
split sample id	HD1	date analysed	01/09/88
		analysis basis type (ad,db,ar,em)	AD

name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.16
total moisture %	21.78	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.69	fsi	__._
ash %	56.92	hgi	___._
volatile matter %	16.09	co2 %	__.__
fixed carbon %	24.30		

gross calorific value (mj/kg)	9.51
net calorific value (mj/kg)	__.__

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88402

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10	*90			SILTSTONE	SSY.M.GY ROOF ROCK. VERY WEATHERED TO A BUFF/ORN G COLOUR.
	0.10	0.13	0.03	*90	08407		COAL	C-5.BLK.PWRD WEATHERED.
	0.13	0.15	0.02	*90	08407		COAL	C-3.BLK.PWRD ABUNDANT C-2 FRAGS. PWRD, VERY WEATHERE D. FE STAINING. 2MM THICK QTZ VEIN.
	0.15	0.55	0.40	*90	08407		MUDSTONE	CARB.BLK FISSILE WEATHERED. SOFT WITH MINOR COAL PARTINGS.
	0.55	0.62	0.07	*90	08407		COAL	C-3.BLK.PWRD VERY WEATHERED. ABUNDANT C-2 FRAGS.
	0.62	0.77	0.15	*90	08407		COAL	C-4.BLK.PWRD VERY WEATHERED. MINOR FE STAINING & QTZ VEINS (3-5MM).
	0.77	0.82	0.05	*90	08407		COAL	C-3.BLK WEATHERED MODERATELY WELL CLEATED.
	0.82	0.86	0.04	*90	08407		COAL	C-4.BLK VERY WEATHERED, MINOR QTZ VEINS & C-3 P ARTINGS.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88402

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.86	0.90	0.04	*90	08407		MUDSTONE	CARB.BLK VERY WEATHERED. ABUNDANT MINOR COAL FRA GS.
	0.90	0.93	0.03	*90	08407		COAL	C-1.BLK WEATHERED. GOOD CONCHOIDAL FRACTURE.
	0.93	0.95	0.02	*90	08407		COAL	C-2.BLK.PWRD VERY WEATHERED.
	0.95	0.99	0.04	*90	08407		COAL	C-1.BLK WEATHERED.
	0.99	1.02	0.03	*90	08407		COAL	C-1.BLK POWDERED.
	1.02	1.05	0.03	*90	08407		COAL	C-2.BLK VERY WEATHERED.
	1.05	1.10	0.05	*90	08407		COAL	C-3.BLK MINOR C-2 PARTINGS.
	1.10	1.25	0.15	*90	08407		MUDSTONE	CARB.BLK WEATHERED & SOFT.
	1.25	1.33	0.08	*90	08407		COAL	C-4.BLK INTERBEDDED C-3, C-4, C-5. FE STAINING.

* DENOTES MEASURED BCA

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88403 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/02/88
END DATE - 08/02/88

CONTRACTOR -
GEOLOGIST - WILLIS
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - OTC88002 - MOUNT JACKSON WEST. C/C+R = 0.71/0.77

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1643.00
ZONE - 9
NORTHING - 6294215.00
EASTING - 548180.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 1.00
INCLINATION - 25.0
AZIMUTH - 355.0

SIZE WIDTH - 0.2
SIZE HEIGHT - 0.5

ROOF STRIKE - 125
ROOF DIP - 32
ROOF DIR - N
FLOOR STRIKE - 126
FLOOR DIP - 30
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88403 SEAM : INTERVAL(M) : 0.11 - 0.88 ELEVATION(M) : 1643.0

GEOLOGIST : WILLIS SCALE: 1:40 DATE : NOV 30/88 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.11			0.45	100.0	8408	8408	0.71 / 0.06 0.77		2.23	41.82	7.20	48.95	0.41	17.37	—
	0.88			0.24												

gcri coal division	head	proj EVC BLK XX DS TRC88403	
sample id	08408	data type (real,boro,aver,calc)	REAL
split sample id	HD1	date analysed	01/09/88
		analysis basis type (ad,db,ar,em)	AD
name of standard (astm,jis,din,bs,as,gost,iso)		ASTM	

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.41
total moisture %	10.43	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.23	fsi	__._
ash %	41.62	hgi	___._
volatile matter %	7.20	co2 %	__.__
fixed carbon %	48.95		

gross calorific value (mj/kg)	17.37
net calorific value (mj/kg)	__.__

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88403

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.11	0.11	*90			MUDSTONE	CARB.BLK HOMOGENEOUS. SCREE COVERED. W/ 1 CM CAL CITE VEIN AT BASE.
	0.11	0.18	0.07	*90	08408		COAL	C-2.BLK WELL CLEATED. WEATHERED FE STAIN, RED T O ORANGE.
	0.18	0.27	0.09	*90	08408		COAL	C-1.BLK WELL CLEATED. SLIGHTLY WEATHERED.
	0.27	0.29	0.02	*90	08408		COAL	C-3.BN WEATHERED LT BROWN.
	0.29	0.31	0.02	*90	08408		COAL	C-2.BLK
	0.31	0.33	0.02	*90	08408		COAL	C-3.BLK VERY WEATHERED, YBRKN, ABUNDANT C-1 FRA GMENTS.
	0.33	0.42	0.09	*90	08408		COAL	C-4.BLK VERY WEATHERED, SOFT.
	0.42	0.45	0.03	*90	08408		COAL	C-1.BLK WEATHERED, FE STAINED.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88403

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.45	0.55	0.10	*90	08408		COAL	C-5.BLK SOFT, VERY WEATHERED. ABUNDANT C-2 PART INGS - 1MM THICK. ABUNDANT CARB MUDST I NTERBANDS.
	0.55	0.56	0.01	*90	08408		COAL	C-1.BLK WEATHERED, FE STAINED.
	0.56	0.57	0.01	*90	08408		MUDSTONE	CARB.BLK SOFT.
	0.57	0.59	0.02	*90	08408		COAL	C-3.BLK WEATHERED, ABUNDANT FE.
	0.59	0.64	0.05	*90	08408		MUDSTONE	CARB.BLK WEATHERED, FE STAINING.
	0.64	0.79	0.15	*90	08408		COAL	C-1.BLK WEATHERED, FE STAINED, WELL CLEATED.
	0.79	0.88	0.09	*90	08408		COAL	C-3.BLK WEATHERED, C-1, C-2 BANDS, ABUNDANT CAL CITE VEINS 2-4CM THICK.
	0.88	1.18	0.30	*90			MUDSTONE	BLK FRESH SURFACE DARK GREY, WEATHERED SURF ACE MEDIUM GREY MAJOR PLANT MASH.

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88404 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/02/88
END DATE - 08/02/88

CONTRACTOR -
GEOLOGIST - WILLIS
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - NO ROOF, SAME SEAM AS TRC88414. C/C+R = 0.48/0.57

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1600.00
ZONE - 9
NORTHING - 6294200.00
EASTING - 548115.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 1.00
INCLINATION - 39.0
AZIMUTH - 352.0

SIZE WIDTH - 0.3
SIZE HEIGHT - 0.7

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 127
FLOOR DIP - 17
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88404 SEAM : INTERVAL(M) : 0.00 – 0.57 ELEVATION(M) : 1600.0

GEOLOGIST : WILLIS SCALE: 1:40 DATE : JAN 16/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.00			0.33	100.0	8409	8409	0.48/ 0.09		3.33	34.11	13.87	48.69	0.28	18.01
	0.57				100.0	8409		0.57							

gcri coal division	head	proj EVC	BLK XX	DS TRC88404	
sample id	08409	data type (real,boro,aver,calc)			REAL
split sample id	HD1	date analysed	01/09/88		
		analysis basis type (ad,db,ar,em)			AD
name of standard (astm,jis,din,bs,as,gost,iso)		ASTM			
top size (mm)	35.00				
surface moisture %	__.__			total sulphur %	0.28
total moisture %	18.54			phosphorous %	_.___
equilibrium moisture %	__.__			chlorine (ppm)	_____
				specific gravity	_.__
residual moisture %	3.33			fsi	__._
ash %	34.11			hgi	___._
volatile matter %	13.87			co2 %	__.__
fixed carbon %	48.69				
gross calorific value (mj/kg)	18.01				
net calorific value (mj/kg)	__.__				

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88404

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10	*90	08409		COAL	C-3.BLK WEATHERED UPWARD.
	0.10	0.20	0.10	*90	08409		COAL	C-2.BLK WEATHERED UPWARD.
	0.20	0.23	0.03	*90	08409		COAL	C-1.BLK VERY WEATHERED.
	0.23	0.28	0.05	*90	08409		COAL	C-2.BLK.PWRD VERY WEATHERED.
	0.28	0.33	0.05	*90	08409		COAL	C-5.BLK.PWRD VERY WEATHERED.
	0.33	0.36	0.03	*90	08410		BENTONITE	GY BENTONITE MUD, BLK BUT VERY WEATHERED.
	0.36	0.43	0.07	*90	08409		COAL	C-1.BLK WEATHERED PURPLE/RED, GOOD CLEATING.
	0.43	0.49	0.06	*90	08409		MUDSTONE	CARB.BLK
	0.49	0.52	0.03	*90	08409		COAL	C-2.BLK WEATHERED, FE STAINED.
	0.52	0.55	0.03	*90	08409		COAL	C-4.BLK.PWRD VERY WEATHERED.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88404

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.55	0.57	0.02	*90	08409		COAL	C-3.BLK.PWRD VERY WEATHERED.
	0.57	0.67	0.10	*90			MUDSTONE	CARB.BLK

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88405 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/05/88
END DATE - 08/05/88

CONTRACTOR -
GEOLOGIST - LEE
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - ROOF ERODED, TOO WEATHERED TO SAMPLE, C/C + R = 0. 81/1.18.

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1660.00
ZONE - 9
NORTHING - 6294625.00
EASTING - 549440.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 1.50
INCLINATION - 28.0
AZIMUTH - 179.0

SIZE WIDTH - 0.5
SIZE HEIGHT - 1.2

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 113
FLOOR DIP - 27
FLOOR DIR - N

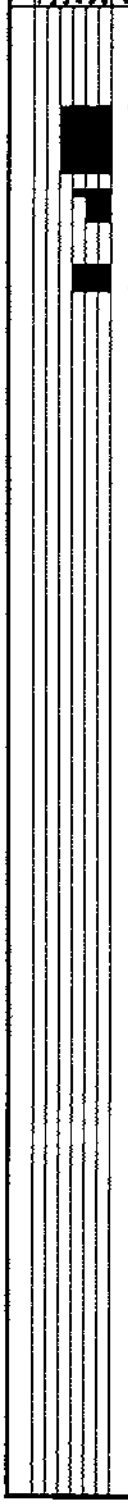
*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

SEAM DETAIL — COAL DIVISION — **TRUE THICKNESS**

DATA SOURCE: EVC XX TRC88405 SEAM : INTERVAL(M) : 0.00 – 1.18 ELEVATION(M) : 1660.0

GEOLOGIST : LEE SCALE: 1:40 DATE : FEB 07/88 DRAWING NO. :



SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
1 2 3 4 5 6															
	0.00			0.43											
			0.10												
				0.21	100.0	99999	99999	0.81/0.37		—	—	—	—	—	—
			0.27					1.18							
	1.18			0.17											

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88405

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			COAL	C-3.BLK VERY WEATHERED, POWDERED WITH SOME C-3 PIECES.
	0.25	0.43	0.18	*90			COAL	C-3.BLK WEATHERED IN CHUNKS.
	0.43	0.53	0.10	*90			MUDSTONE	CARB.DK.GY WITH NUMEROUS COAL FLECKS, ICE CRYSTALS
	0.53	0.58	0.05	*90			COAL	C-4.BLK WEATHERED.
	0.58	0.74	0.16	*90			COAL	C-5.BLK VERY WEATHERED, WET (HAS PROBABLY FROZEN), A LOT OF MUD.
	0.74	1.01	0.27	*90			MUDSTONE	CLYY.DK.BN
	1.01	1.18	0.17	*90			COAL	C-4 WEATHERED, FE STAINED BAND, POWDERED.
	1.18	1.32	0.14	*90			MUDSTONE	CLYY.M.BN FLOOR, STICKY, WITH ORANGE BANDS.

* DENOTES MEASURED BCA

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 2

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88405

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.32	1.58	0.26	*90			MUDSTONE	DK.GY POORLY CONSOLIDATED, OCCASIONAL COALY BIT (PROBABLY COAL STRINGERS), SOME MUDST PIECES.

* DENOTES MEASURED BCA

NEWPAGE

FORM 4001

========== GULF CANADA CORPORATION ==========

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88406 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/05/88
END DATE - 08/05/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SEAM IN OTC88001, SAMPLE #05051. C/C+R = 0.45/1.40

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1684.00
ZONE - 9
NORTHING - 6293950.00
EASTING - 549310.00

LICENCE/LEASE NUMBER -

LATITUDE - 564720
LONGITUDE - 1281134

- O R I E N T A T I O N -

LENGTH - 2.87
INCLINATION - 10.0
AZIMUTH - 170.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 0.9

ROOF STRIKE - 146
ROOF DIP - 17
ROOF DIR - N
FLOOR STRIKE - 152
FLOOR DIP - 40
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

==========

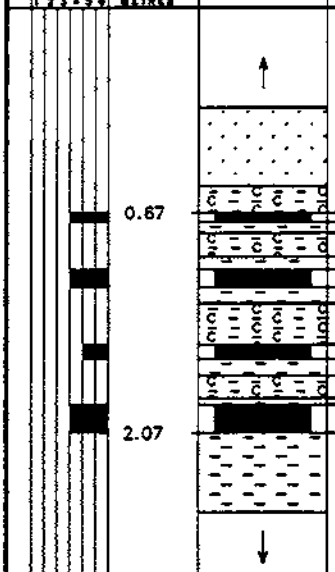
GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88406 SEAM : INTERVAL(M) : 0.67 – 2.07 ELEVATION(M) : 1684.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : JAN 16/89 DRAWING NO. :



SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
1 2 3 4 5 6															
	0.67		0.25	0.08 / 0.12 / 0.08 / 0.11 / 0.14 / 0.16	100.0	5051	5051	0.45 / 0.95 / 1.40		2.25	42.82	15.76	18.17	0.27	7.23
	2.07														

gcri coal division head proj EVC BLK XX DS TRC88406

sample id	05051	data type (real,boro,aver,calc)	REAL
split sample id	HD1	date analysed	01/09/88
		analysis basis type (ad,db,ar,em)	AD

name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.27
total moisture %	24.04	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.25	fsi	__._
ash %	62.82	hgi	___._
volatile matter %	15.76	co2 %	__.__
fixed carbon %	19.17		

gross calorific value (mj/kg)	7.23
net calorific value (mj/kg)	__.__

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88406

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.50	0.50	*90			SANDSTONE	CLYY ROOF ROCK SS, VERY CLYY INTERBEDDED WIT H CLYY SLTST.
	0.50	0.67	0.17	*90			MUDSTONE	CARB.BLK MINOR COAL STRINGERS, LISTRIC SURFACES.
	0.67	0.73	0.06	*90	05051		COAL	C-4 HIGHLY WEATHERED.
	0.73	0.80	0.07	*90	05051		MUDSTONE	CLYY FE STAINING, MINOR CARB MUD.
	0.80	0.95	0.15	*90	05051		MUDSTONE	CARB.BLK HIGHLY WEATHERED.
	0.95	1.03	0.08	*90	05051		MUDSTONE	FE STAINING THROUGHOUT.
	1.03	1.15	0.12	*90	05051		COAL	C-4.BLK HIGHLY WEATHERED, HIGHLY OXIDES, C-4 PO SSIBLE C-3, ORANGE-BROWN, MUD PARTINGS, CONCHOIDAL FRACTURES.
	1.15	1.25	0.10	*90	05051		MUDSTONE	FE STAINING.
	1.25	1.51	0.26	*90	05051		MUDSTONE	CARB.BLK COAL WITHIN, WEATHERED C-5.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88406

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.51	1.60	0.09	*90	05051		COAL	C-5 HIGHLY WEATHERED.
	1.60	1.71	0.11	*90	05051		MUDSTONE	CLYY
	1.71	1.85	0.14	*90	05051		MUDSTONE	CARB.BLK
	1.85	1.89	0.04	*90	05051		MUDSTONE	LT.GY
	1.89	2.07	0.18	*90	05051		COAL	C-4 FE STAINING, HIGHLY WEATHERED.
	2.07	2.57	0.50	*90			MUDSTONE	LT.GY FLOOR ROCK, HIGHLY WEATHERED.

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88407 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/05/88
END DATE - 08/05/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SEAM IN OTC88001, SAMPLE #05052. C/C+R = 0.39/0.44

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1664.21
ZONE - 9
NORTHING - 6293940.00
EASTING - 549295.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 3.09
SIZE WIDTH - 0.8
SIZE HEIGHT - 1.1
INCLINATION - 30.0
AZIMUTH - 34.0

ROOF STRIKE - 120
ROOF DIP - 20
ROOF DIR - N
FLOOR STRIKE - 126
FLOOR DIP - 29
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION
COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88407 SEAM : INTERVAL(M) : 0.25 – 0.69 ELEVATION(M) : 1664.2

GEOLOGIST : MURRAY SCALE: 1:40 DATE : FEB 07/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.25			0.29	100.0	5052	5052	0.39/ 0.05		2.63	51.03	18.55	27.79	0.15	10.38	—
	0.69			0.10				0.44								

gcri coal division head proj EVC BLK XX DS TRC88407

sample id	05052	data type (real,boro,aver,calc)	REAL
split sample id	HD1	date analysed	01/09/88
		analysis basis type (ad,db,ar,em)	AD

name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.15
total moisture %	26.45	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.63	fsi	__._
ash %	51.03	hgi	___._
volatile matter %	18.55	co2 %	__.__
fixed carbon %	27.79		

gross calorific value (mj/kg)	10.36
net calorific value (mj/kg)	__.__

89/01/16 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88407

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			MUDSTONE	CLYY.M.GY ROOF ROCK MUDST - M GREY TO RUST BROWN, M GREY FRESH, VERY CLYY.
	0.25	0.31	0.06	*90	05052		COAL	C-3 HIGHLY OXIDED, RUST-BROWN WEATHERED.
	0.31	0.54	0.23	*90	05052		COAL	C-5 CARB MUDST THROUGHOUT. SOME C-3 WITHIN.
	0.54	0.59	0.05	*90	05052		MUDSTONE	CARB
	0.59	0.69	0.10	*90	05052		COAL	C-4.BN HIGHLY WEATHERED, RUST-BROWN WEATHERING , QTZ STRINGERS WITHIN.
	0.69	0.94	0.25	*90			MUDSTONE	CLYY.M.BN FLOOR ROCK.

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88408 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/05/88
END DATE - 08/05/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SEAM IN OTC88001, SAMPLE #05053. C/C+R = 0.85/0.85

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1653.54
ZONE - 9
NORTHING - 6293915.00
EASTING - 549280.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 2.00
INCLINATION - 42.0
AZIMUTH - 282.0

SIZE WIDTH - 0.8
SIZE HEIGHT - 1.1

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 168
FLOOR DIP - 17
FLOOR DIR - E

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88408 SEAM : INTERVAL(M) : 0.25 – 1.10 ELEVATION(M) : 1653.5

GEOLOGIST : MURRAY SCALE: 1:40 DATE : JAN 16/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.25			0.85	100.0	5053	5053	0.85/ 0.00 0.85		2.86	30.27	20.69	46.18	0.23	16.19	—
	1.10															

gcri coal division	head	proj EVC	BLK XX	DS TRC88408	
sample id	05053	data type (real,boro,aver,calc)			REAL
split sample id	HD1	date analysed	01/09/88		
		analysis basis type (ad,db,ar,em)			AD
name of standard (astm,jis,din,bs,as,gost,iso)		ASTM			

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.23
total moisture %	26.77	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.86	fsi	__._
ash %	30.27	hgi	___._
volatile matter %	20.69	co2 %	__.__
fixed carbon %	46.18		

gross calorific value (mj/kg)	16.19
net calorific value (mj/kg)	__.__

89/01/16 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88408

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			MUDSTONE	M.GY ROOF ROCK MUDST - M GREY FRESH, M BROWN TO RUST BROWN WEATHERED.
	0.25	0.35	0.10	*90	05053		COAL	C-5 VERY WEATHERED.
	0.35	0.61	0.26	*90	05053		COAL	C-4.BLK VERY WEATHERED, MINOR C-3 AND MUD.
	0.61	0.71	0.10	*90	05053		COAL	C-4.BLK
	0.71	0.97	0.26	*90	05053		COAL	C-3.BLK MINOR CARB MUD, GOOD CLEAT, CONCHOIDAL FRACTURE.
	0.97	1.10	0.13	*90	05053		COAL	C-5 CARB MUD THROUGHOUT, SOME C-3.
	1.10	1.35	0.25	*90			MUDSTONE	CLYY.M-DK.GY M BROWN WEATHERED, M-DK GREY FRESH.

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88409 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/05/88
END DATE - 08/05/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SEAM IN OTC88001, SAMPLE #05054. C/C+R = 0.30/0.30

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1613.92
ZONE - 9
NORTHING - 6293920.00
EASTING - 549260.00

LICENCE/LEASE NUMBER -

LATITUDE - 564719
LONGITUDE - 1281137

- O R I E N T A T I O N -

LENGTH - 1.19
SIZE WIDTH - 0.8
SIZE HEIGHT - 1.0
INCLINATION - 36.0
AZIMUTH - 298.0

ROOF STRIKE - 160
ROOF DIP - 37
ROOF DIR - E
FLOOR STRIKE - 160
FLOOR DIP - 30
FLOOR DIR - E

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION
COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88409 SEAM : INTERVAL(M) : 0.39 – 0.69 ELEVATION(M) : 1613.9

GEOLOGIST : MURRAY SCALE: 1:40 DATE : JAN 16/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.39			0.30	100.0	5054	5054	0.30/ 0.00		1.38	37.12	8.74	54.76	0.40	15.60
	0.69							0.30							

gcri coal division head proj EVC BLK XX DS TRC88409

sample id	05054	data type (real,boro,aver,calc)	REAL
split sample id	HD1	date analysed	01/09/88
		analysis basis type (ad,db,ar,em)	AD

name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.40
total moisture %	10.27	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	1.38	fsi	__._
ash %	37.12	hgi	___._
volatile matter %	6.74	co2 %	__.__
fixed carbon %	54.76		

gross calorific value (mj/kg)	16.60
net calorific value (mj/kg)	__.__

89/01/16 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88409

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			SANDSTONE	MG.BN ROOF ROCK, VERY ARGILLACEOUS RED-BROWN, LT GREY TO LT BROWN FRESH, BROWN WEATHERED.
	0.25	0.28	0.03	*90			MUDSTONE	BROWN WEATHERED.
	0.28	0.39	0.11	*90			MUDSTONE	CARB.BLK CARB MUDST, LT BROWN WEATHERED, QTZ STRINGERS THROUGHOUT.
	0.39	0.69	0.30	*90	05054		COAL	C-3.BLK GOOD CONCHOIDAL FRACTURES, SOME C-1, GOOD CLEATING.
	0.69	0.78	0.09	*90			MUDSTONE	CARB.BLK CARB MUDST, OCCASIONAL C-3 BANDS.
	0.78	1.03	0.25	*90			MUDSTONE	FLOOR ROCK, MUDST LT GREY WEATHERED, M GREY FRESH.

* DENOTES MEASURED BCA

NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88410 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/05/88
END DATE - 08/05/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SEAM IN OTC88001, SAMPLE #05055. C/C+R = 0.67/0.67

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1603.25
ZONE - 9
NORTHING - 6293895.00
EASTING - 549205.00

LICENCE/LEASE NUMBER -

LATITUDE - 564718
LONGITUDE - 1281141

- O R I E N T A T I O N -

LENGTH - 0.96
INCLINATION - 66.0
AZIMUTH - 280.0

SIZE WIDTH - 1.0
SIZE HEIGHT - 0.5

ROOF STRIKE - 142
ROOF DIP - 20
ROOF DIR - N
FLOOR STRIKE - 162
FLOOR DIP - 25
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

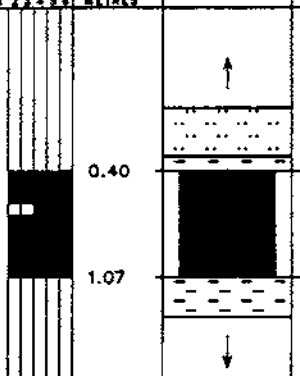
GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88410 SEAM : INTERVAL(M) : 0.40 – 1.07 ELEVATION(M) : 1603.3

GEOLOGIST : MURRAY SCALE: 1:40 DATE : JAN 16/89 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.40			0.67	100.0	5055	5055	0.67/ 0.00 0.67		2.25	15.23	9.29	73.23	0.35	26.53	—
	1.07															

gcri coal division	head	proj	EVC	BLK	XX	DS	TRC88410

sample id	05055	data type (real,boro,aver,calc)	REAL
split sample id	HD1	date analysed	01/09/88
		analysis basis type (ad,db,ar,em)	AD
name of standard (astm,jis,din,bs,as,gost,iso)		ASTM	

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.35
total moisture %	12.27	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.25	fsi	__._
ash %	15.23	hgi	___._
volatile matter %	9.29	co2 %	__.__
fixed carbon %	73.23		

gross calorific value (mj/kg)	26.53
net calorific value (mj/kg)	__.__

89/01/16 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88410

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.31	0.31	*90			SILTSTONE	M.GY.VTHNB ROOF ROCK, SLTST INTERBEDDED MUDST, BRO HN WEATHERED. M GREY FRESH, VERY THINLY BEDDED.
	0.31	0.40	0.09	*90			MUDSTONE	CLYY DK GREY FRESH, VERY FISSILE.
	0.40	0.61	0.21	*90	05055		COAL	C-2.BN BROWN TO RUST BROWN WEATHERED, DK BROWN FRESH, GOOD CLEATING, CONCHOIDAL FRACT URES, SOME C-1.
	0.61	0.68	0.07	*90	05055		COAL	C-4 VERY WEATHERED, MINOR MUDST WITHIN.
	0.68	1.07	0.39	*90	05055		COAL	C-2 A LOT OF CONCHOIDAL FRACTURE, WELL CLEA TED, C-1 THROUGHOUT.
	1.07	1.32	0.25	*90			MUDSTONE	CLYY FLOOR ROCK, MUDST, CLYY PLANT HASH.

* DENOTES MEASURED BCA
NEWPAGE

FORM 4001

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88411 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/05/88
END DATE - 08/05/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - NOT SAMPLED. C/C+R = 0.30/0.30

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1568.00
ZONE - 9
NORTHING - 6293840.00
EASTING - 549130.00

LICENCE/LEASE NUMBER -

LATITUDE - 564716
LONGITUDE - 1281145

- O R I E N T A T I O N -

LENGTH - 0.63
INCLINATION - 60.0
AZIMUTH - 280.0

SIZE WIDTH - 1.3
SIZE HEIGHT - 0.8

ROOF STRIKE - 134
ROOF DIP - 30
ROOF DIR - N
FLOOR STRIKE - 134
FLOOR DIP - 30
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL

TRUE THICKNESS

DATA SOURCE: EVC XX TRC88411 SEAM : INTERVAL(M) : 0.37 – 0.67 ELEVATION(M) : 1568.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : FEB 07/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.37			0.30	100.0	99999	99999	0.30/ 0.00		—	—	—	—	—	—	—
	0.67							0.30								

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88411

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			SANDSTONE	SLTY.FG ROOF ROCK, FG SS INTERBEDDED WITH SLTST .
	0.25	0.37	0.12	*90			MUDSTONE	CLYY.LT.GY SOFT, M GREY FRESH.
	0.37	0.43	0.06	*90			COAL	C-4.BLK VERY WEATHERED.
	0.43	0.60	0.17	*90			COAL	C-3.BLK VERY WEATHERED.
	0.60	0.67	0.07	*90			COAL	C-2 GOOD CLEAT, CONCHOIDAL FRACTURES, VERY THIN CARB MUDST BANDS.
	0.67	0.92	0.25	*90			MUDSTONE	FLOOR ROCK, PLANT HASH, ORANGE-BROWN WE ATHERING, M GREY FRESH, SOME COAL STRIN GERS.

* DENOTES MEASURED BCA
NEWPAGE

FORM 4001

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88412 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/05/88
END DATE - 08/05/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SAMPLE NUMBER 05056. C/C+R = 0.43/0.43

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1786.00
ZONE - 9
NORTHING - 6293650.00
EASTING - 550150.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 2.77
INCLINATION - 8.0
AZIMUTH - 140.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 0.9

ROOF STRIKE - 90
ROOF DIP - 31
ROOF DIR - N
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

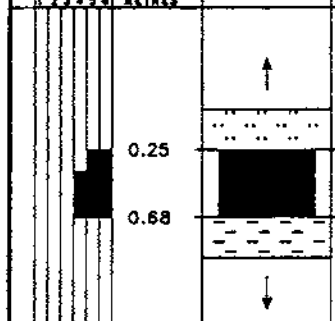
GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88412 SEAM : INTERVAL(M) : 0.25 – 0.68 ELEVATION(M) : 1786.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : JAN 16/89 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.25			0.43	100.0	5056	5056	0.43/ 0.00 0.43		2.03	33.80	23.62	40.55	0.27	14.41	—
	0.68															

gcri coal division head proj EVC BLK XX DS TRC88412

sample id 05056 data type (real,boro,aver,calc) REAL
split sample id HD1 date analysed 01/09/88
analysis basis type (ad,db,ar,em) AD
name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.27
total moisture %	31.18	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	______
		specific gravity	_.__
residual moisture %	2.03	fsi	__._
ash %	33.80	hgi	___._
volatile matter %	23.62	co2 %	__.__
fixed carbon %	40.55		

gross calorific value (mj/kg) 14.41
net calorific value (mj/kg) __.__

89/01/16 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88412

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			SILTSTONE	ROOF ROCK, ORANGE WEATHERING, M TO DK M EATHERED.
	0.25	0.39	0.14	*90	05056		COAL	C-5 VERY WEATHERED.
	0.39	0.54	0.15	*90	05056		COAL	C-4 VERY WEATHERED, MINOR QTZ WITHIN.
	0.54	0.68	0.14	*90	05056		COAL	C-4 MUDST PARTING WITHIN, DULL TEXTURE, WEL L BEDDED.
	0.68	0.93	0.25	*90			MUDSTONE	FLOOR ROCK, MUDST M GREY WEATHERED, DK GREY FRESH.

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88413 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/06/88
END DATE - 08/06/88

CONTRACTOR -
GEOLOGIST - LEE
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - ROOF ERODED, RELOGGED SUNCOR'S MJ8310, C/C + R = 0 .90/1.05.

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1558.00
ZONE - 9
NORTHING - 6295040.00
EASTING - 549760.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 0.80
INCLINATION - 0.0
AZIMUTH - 100.0

SIZE WIDTH - 0.8
SIZE HEIGHT - 0.9

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 78
FLOOR DIP - 36
FLOOR DIR - W

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88413 SEAM : INTERVAL(M) : 0.18 – 1.05 ELEVATION(M) : 1558.0

GEOLOGIST : LEE SCALE: 1:40 DATE : NOV 30/88 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.18			0.16											
			0.09												
				0.53	100.0	5057	5057	0.75 / 0.12 0.87		2.17	17.93	15.33	64.57	0.31	22.62
	1.05		0.43	0.04											

gcri coal division	head	proj EVC	BLK XX	DS TRC88413

sample id	05057	data type (real,boro,aver,calc)	REAL
split sample id	HD1	date analysed	01/09/88
		analysis basis type (ad,db,ar,em)	AD

name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.31
total moisture %	18.72	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	------
		specific gravity	_.__
residual moisture %	2.17	fsi	__._
ash %	17.93	hgi	___._
volatile matter %	15.33	co2 %	__.__
fixed carbon %	64.57		

gross calorific value (mj/kg)	22.62
net calorific value (mj/kg)	__.__

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88413

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.15	0.15	*90			COAL	C-5 VERY WEATHERED WITH DIRT AND ROOTS, UNC ONSOLIDATED.
	0.15	0.18	0.03	*90			MUDSTONE	DK.GY.THNB WEATHERED, FE STAINED.
	0.18	0.34	0.16	*90	05057		COAL	C-4 WEATHERED, UNCONSOLIDATED, OCCASIONAL V ERY THIN MUD BAND.
	0.34	0.43	0.09	*90	05057		MUDSTONE	DK.GY.VTHNB
	0.43	0.63	0.20	*90	05057		COAL	C-2 SOME C-1 BANDS WITH CONCHOIDAL FRACTURE S, BREAKS INTO LARGE PIECES, MODERATELY CONSOLIDATED, PARTIALLY WEATHERED.
	0.63	0.71	0.08	*90	05057		COAL	C-3 NOT AS WELL CONSOLIDATED AS ABOVE.
	0.71	0.80	0.09	*90	05057		COAL	C-3 SOME CONCHOIDAL FRACTURED BANDS, BREAKS INTO LARGE PIECES.

* DENOTES MEASURED BCA

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 2

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88413

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.80	0.96	0.16	*90	05057		COAL	C-2
	0.96	0.99	0.03	*90	05057		MUDSTONE	HIGHLY FE STAINED, VERY WEATHERED YELLO W-BROWN AND BRIGHT ORANGE, VERY SOFT. P OORLY CONSOLIDATED.
	0.99	1.05	0.06	*90	05057		COAL	C-3
	1.05	1.10	0.05	*90			MUDSTONE	CARB MODERATELY CONSOLIDATED. FLOOR.
	1.10	1.80	0.70	*90			MUDSTONE	DK.GY FAIRLY HARD, WEATHERED M BROWN, SOME FE STAIN, UNIDENTIFIABLE PLANT FRAGMENTS.

* DENOTES MEASURED BCA
NEWPAGE

FORM 4001

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88414 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/07/88
END DATE - 08/07/88

CONTRACTOR -
GEOLOGIST - LEE
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - C/C + R = 0.84/1.22, SAME SEAM AS TRC88404.

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1570.00
ZONE - 9
NORTHING - 6294380.00
EASTING - 548500.00

LICENCE/LEASE NUMBER -

LATITUDE - 564734
LONGITUDE - 1281222

- O R I E N T A T I O N -

LENGTH - 2.00
INCLINATION - 25.0
AZIMUTH - 155.0

SIZE WIDTH - 0.4
SIZE HEIGHT - 0.4

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 126
FLOOR DIP - 26
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

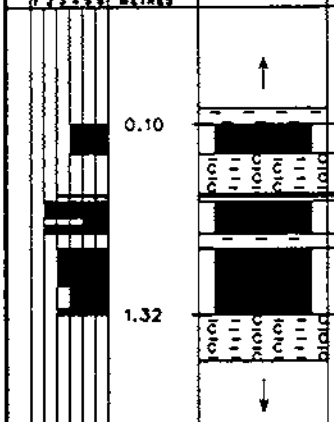
GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — **TRUE THICKNESS**

DATA SOURCE: EVC XX TRC88414 SEAM : INTERVAL(M) : 0.10 – 1.32 ELEVATION(M) : 1570.0

GEOLOGIST : LEE SCALE: 1:40 DATE : NOV 30/88 DRAWING NO. :



SEAM COMP.	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
1 2 3 4 5 6	0.10			0.19											
			0.25												
				0.21	100.0	5058	5058	0.84/ 0.38		2.57	34.94	12.59	49.90	0.41	18.40
			0.09					1.22							
				0.43											
	1.32														

gcri coal division head proj EVC BLK XX DS TRC88414

sample id	05058	data type (real,boro,aver,calc)	REAL
split sample id	HD1	date analysed	01/09/88
		analysis basis type (ad,db,ar,em)	AD

name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.41
total moisture %	14.32	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.57	fsi	__._
ash %	34.94	hgi	___._
volatile matter %	12.59	co2 %	__.__
fixed carbon %	49.90		

gross calorific value (mj/kg)	18.40
net calorific value (mj/kg)	__.__

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88414

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10	*90			MUDSTONE	M.BN.VTHNB ROOF, HIGHLY WEATHERED, MODERATELY CONS OLIDATED.
	0.10	0.29	0.19	*90	05058		COAL	C-4.BLK WEATHERED AND POWDERED.
	0.29	0.54	0.25	*90	05058		MUDSTONE	CARB.DK.GY.LAM MODERATELY CONSOLIDATED, QTZ STRINGERS.
	0.54	0.55	0.01	*90	05058		BENTONITE	LT.GY VERY SOFT, STICKY.
	0.55	0.56	0.01	*90	05058		COAL	C-3.BLK POWDERED.
	0.56	0.59	0.03	*90	05058		MUDSTONE	WEATHERED BROWN-ORANGE, FE STAINED BAND S, COAL STRINGERS.
	0.59	0.70	0.11	*90	05058		COAL	C-2.BLK WEATHERED, BREAKS INTO PIECES.
	0.70	0.74	0.04	*90	05058		COAL	C-5.BLK
	0.74	0.80	0.06	*90	05058		COAL	C-2.BLK WITH SOME C-1 BANDS, CONCHOIDAL FRACTUR ING.

* DENOTES MEASURED BCA

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 2

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88414

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.80	0.89	0.09	*90	05058		MUDSTONE	DK.GY.LAM SOFT.
	0.89	1.13	0.24	*90	05058		COAL	C-3.BLK POSSIBLY C-2, WEATHERED, FAIRLY WELL CO NSOLIDATED.
	1.13	1.28	0.15	*90	05058		COAL	C-4 POWDERED.
	1.28	1.32	0.04	*90	05058		COAL	C-3
	1.32	1.62	0.30	*90			MUDSTONE	CARB.DK.GY.LAM FLOOR, POORLY CONSOLIDATED, EASILY BROK EN, COAL STRINGERS.

* DENOTES MEASURED BCA
NEWPAGE

FORM 4001

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88415 DATE - 01/13/89

- H I S T O R Y -

START DATE - 08/07/88
END DATE - 08/07/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - TRENCH NOT SAMPLED IN VALLEY SOUTH OF JACKSON. C/C
+R = 0.39/0.45

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1673.35
ZONE - 9
NORTHING - 6292895.00
EASTING - 549950.00

LICENCE/LEASE NUMBER -

LATITUDE - 564645
LONGITUDE - 1281057

- O R I E N T A T I O N -

LENGTH - 1.40
INCLINATION - 37.0
AZIMUTH - 65.0

SIZE WIDTH - 0.4
SIZE HEIGHT - 1.6

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 110
FLOOR DIP - 33
FLOOR DIR - S

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88415 SEAM : INTERVAL(M) : 0.65 – 1.10 ELEVATION(M) : 1673.4

GEOLOGIST : MURRAY SCALE: 1:40 DATE : FEB 07/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.65			0.10											
			0.04												
				0.29	100.0	00000	00000	0.38/ 0.06		—	—	—	—	—	—
	1.10							0.45							

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88415

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			SANDSTONE	FG.GY ROOF ROCK SS LT BROWN WEATHERED, GREY FRESH FG.
	0.25	0.29	0.04	*90			MUDSTONE	CLYY.LT.GY VERY SOFT.
	0.29	0.65	0.36	*90			MUDSTONE	CARB.BLK VERY WEATHERED, SOME COAL WITHIN.
	0.65	0.75	0.10	*90			COAL	C-S.BLK HIGHLY WEATHERED.
	0.75	0.81	0.06	*90			MUDSTONE	CARB.BLK
	0.81	1.10	0.29	*90			COAL	C-S.BLK VERY WEATHERED.
	1.10	1.35	0.25	*90			MUDSTONE	CLYY.DK.GY WEATHERED.

* DENOTES MEASURED BCA

NEWPAGE

FORM 4001

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88416 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/10/88
END DATE - 08/10/88

CONTRACTOR -
GEOLOGIST - LEE
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - UPPER DISCOVERY CREEK, C/C + R = 1.62/2.01.

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1323.00
ZONE - 9
NORTHING - 6301615.00
EASTING - 541900.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 0.30
INCLINATION - 60.0
AZIMUTH - 264.0

SIZE WIDTH - 0.1
SIZE HEIGHT - 2.1

ROOF STRIKE - 165
ROOF DIP - 22
ROOF DIR - E
FLOOR STRIKE - 169
FLOOR DIP - 22
FLOOR DIR - E

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88416 SEAM : INTERVAL(M) : 0.50 - 2.51 ELEVATION(M) : 1323.0

GEOLOGIST : LEE SCALE: 1:40 DATE : JAN 16/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.50			0.67	100.0	5059	5059	1.62 / 0.39 2.01		2.84	22.60	6.88	67.68	0.34	24.30
			0.14												
				0.76											
			0.21												
	2.51			0.14											

gcri coal division	head	proj EVC	BLK XX	DS TRC88416	
sample id	05059	data type (real,boro,aver,calc)			REAL
split sample id	HD1	date analysed	01/09/88		
		analysis basis type (ad,db,ar,em)			AD
name of standard (astm,jis,din,bs,as,gost,iso)		ASTM			

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.34
total moisture %	__.__	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.84	fsi	__._
ash %	22.60	hgi	___._
volatile matter %	6.88	co2 %	__.__
fixed carbon %	67.68		

gross calorific value (mj/kg)	24.50
net calorific value (mj/kg)	__.__

89/01/16 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88416

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.50	0.50	*90			MUDSTONE	DK.GY.VTHNB ROOF, VERY WEATHERED, COAL STRINGERS ES P TOWARDS BASE.
	0.50	0.53	0.03	*90	05059		COAL	C-1.BLK HIGHLY WEATHERED, FE STAIN.
	0.53	0.57	0.04	*90	05059		MUDSTONE	CARB.DK.GY COAL STRINGERS.
	0.57	1.24	0.67	*90	05059		COAL	C-2.BLK WELL CLEATED, HARD, SOME CONCHOIDALLY F RACTURED C-1 BANDS, WEATHERED, FE STAIN ED.
	1.24	1.38	0.14	*90	05059		MUDSTONE	DK.GY.LAM MODERATELY CONSOLIDATED.
	1.38	1.44	0.06	*90	05059		COAL	C-1.BLK CONCHOIDAL FRACTURES, WELL CONSOLIDATED .
	1.44	1.62	0.18	*90	05059		COAL	C-2.BLK POSSIBLY C-1, CONCHOIDAL FRACTURES, WEL L CLEATED, BANDED.

* DENOTES MEASURED BCA

89/01/16 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 2

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88416

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.62	1.86	0.24	*90	05059		COAL	C-3.BLK EXTREMELY HARD CAN NOT EXPOSED A WELL C LEATED SURFACE JUST CHIP EXPOSING, CONC HOIDAL FRACTURES.
	1.86	2.14	0.28	*90	05059		COAL	C-2.BLK CONCHOIDAL FRACTURING BANDING.
	2.14	2.35	0.21	*90	05059		MUDSTONE	DK.BN.VTHNB VERY WEATHERED, MODERATELY CONSOLIDATED .
	2.35	2.51	0.16	*90	05059		COAL	C-2.BLK WELL CONSOLIDATED, CLEATED, CONCHOIDAL FRACTURE.
	2.51	2.76	0.25	*90			MUDSTONE	M.BN.VTHNB FLOOR, WEATHERED, FE STAINED, SOME NODU LAR WEATHERING.

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88417 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/10/88
END DATE - 08/10/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SAMPLE #05060. C/C+R = 1.49/1.90

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1695.00
ZONE - 9
NORTHING - 6301030.00
EASTING - 555625.00

LICENCE/LEASE NUMBER -

LATITUDE - 565106
LONGITUDE - 1280517

- O R I E N T A T I O N -

LENGTH - 4.30
INCLINATION - 30.0
AZIMUTH - 250.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 1.4

ROOF STRIKE - 110
ROOF DIP - 23
ROOF DIR - N
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

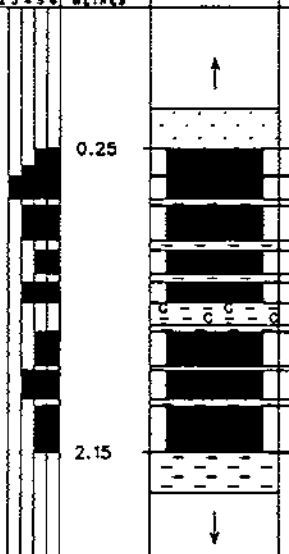
GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88417 SEAM : INTERVAL(M) : 0.25 – 2.15 ELEVATION(M) : 1695.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : FEB 07/89 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.25		0.41	0.17	100.0	5060	5060	1.49 / 0.41		2.42	59.17	16.20	22.21	0.14	8.14
				0.14				1.90							
			0.44	0.22											
			0.45	0.18											
			0.45	0.13											
			0.14												
				0.21											
			0.43	0.18											
			0.44	0.29											
	2.15														

gcri coal division head proj EVC BLK XX DS TRC88417

sample id 05060 data type (real,boro,aver,calc) REAL
split sample id HD1 date analysed 01/09/88
analysis basis type (ad,db,ar,em) AD
name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.14
total moisture %	28.97	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.42	fsi	__._
ash %	59.17	hgi	___._
volatile matter %	16.20	co2 %	__.__
fixed carbon %	22.21		

gross calorific value (mj/kg) 8.14
net calorific value (mj/kg) __.__

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88417

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			SANDSTONE	BN ROOF ROCK, VERY ARGILLACEOUS, BROWN WEA THERED, BROWN TO RED FRESH.
	0.25	0.36	0.11	*90	05060		COAL	C-5.BLK VERY WEATHERED, VERY SOFT, FE STAINED T HROUGHOUT.
	0.36	0.42	0.06	*90	05060		COAL	C-4.BLK VERY WEATHERED, GOOD CLEAT.
	0.42	0.43	0.01	*90	05060		CLAYSTONE	LT.GY VERY SOFT.
	0.43	0.57	0.14	*90	05060		COAL	C-3.BLK HIGHLY OXIDED, GOOD CLEAT, FE STAINING.
	0.57	0.61	0.04	*90	05060		CLAYSTONE	LT.GY LT GREY, VERY SOFT, POSSIBLE BENTONITE.
	0.61	0.83	0.22	*90	05060		COAL	C-4 FE STAINED, MINOR QTZ, GOOD CLEAT, SOME CONCHOIDAL FRACTURES.
	0.83	0.89	0.06	*90	05060		CLAYSTONE	LT.GY POSSIBLE BENTONITE, VERY SOFT.
	0.89	1.04	0.15	*90	05060		COAL	C-5 CARB MUDST WITHIN, BAND OF FE STAINING.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88417

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.04	1.09	0.05	*90	05060		CLAYSTONE	LT.GY VERY SOFT, POSSIBLE BENTONITE.
	1.09	1.22	0.13	*90	05060		COAL	C-4.BLK FE STAINING.
	1.22	1.36	0.14	*90	05060		MUDSTONE	CARB.BLK
	1.36	1.40	0.04	*90	05060		CLAYSTONE	LT.GY POSSIBLE BENTONITE.
	1.40	1.61	0.21	*90	05060		COAL	C-5.BLK CARB MUD, MINOR C-3 VERY WEATHERED.
	1.61	1.64	0.03	*90	05060		CLAYSTONE	LT.GY VERY SOFT, POSSIBLE BENTONITE.
	1.64	1.82	0.18	*90	05060		COAL	C-4 VERY WEATHERED.
	1.82	1.86	0.04	*90	05060		MUDSTONE	HIGHLY OXIDIZED, FE STAINED.
	1.86	2.15	0.29	*90	05060		COAL	C-5 HIGHLY WEATHERED, VERY MUDDY, CARB MUD IN PLACES.
	2.15	2.40	0.25	*90			MUDSTONE	FLOOR ROCK, PLANT FRAGMENTS, ORANGE-BRO WN WEATHERED.

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88418 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/10/88
END DATE - 08/10/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SAMPLE #05061. C/C+R = 0.43/0.56

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1666.00
ZONE - 9
NORTHING - 6301215.00
EASTING - 555430.00

LICENCE/LEASE NUMBER -

LATITUDE - 565112
LONGITUDE - 1280528

- O R I E N T A T I O N -

LENGTH - 1.63
INCLINATION - 32.0
AZIMUTH - 185.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 1.1

ROOF STRIKE - 131
ROOF DIP - 34
ROOF DIR - N
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

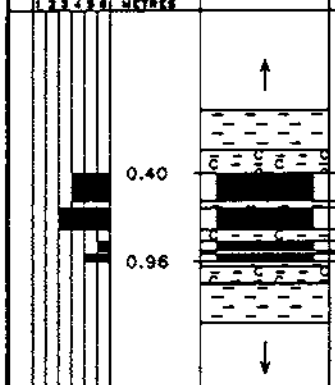
GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88418 SEAM : INTERVAL(M) : 0.40 – 0.96 ELEVATION(M) : 1666.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : NOV 30/88 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG	
	0.40			0.18												
				0.14	100.0	5061	5061	0.43 / 0.13		2.88	40.80	9.45	47.08	0.31	16.78	—
	0.96							0.56								

gcri coal division	head	proj EVC	BLK XX	DS TRC88418	
sample id	05061	data type (real,boro,aver,calc)			REAL
split sample id	HD1	date analysed	01/09/88		
		analysis basis type (ad,db,ar,em)			AD
name of standard (astm,jis.din,bs,as,gost,iso)		ASTM			

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.31
total moisture %	14.61	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.89	fsi	__._
ash %	40.60	hgi	___._
volatile matter %	9.45	co2 %	__.__
fixed carbon %	47.06		

gross calorific value (mj/kg)	16.78
net calorific value (mj/kg)	__.__

88/11/30 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88418

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			MUDSTONE	DK.GY ROOF ROCK, VERY FISSILE.
	0.25	0.40	0.15	*90			MUDSTONE	CARB.BLK SHEARED SURFACES, MINOR COAL WITHIN.
	0.40	0.58	0.18	*90	05061		COAL	C-4 DULL IN APPEARANCE, CONCHOIDAL FRACTURES, MINOR QTZ.
	0.58	0.62	0.04	*90	05061		MUDSTONE	RUST BROWN WEATHERING.
	0.62	0.66	0.04	*90	05061		COAL	C-3 CONCHOIDAL FRACTURES, MUD WITHIN.
	0.66	0.76	0.10	*90	05061		COAL	C-3 CARB MUD WITHIN, SHEARED SURFACES.
	0.76	0.83	0.07	*90	05061		MUDSTONE	CARB
	0.83	0.89	0.06	*90	05061		COAL	C-6 VERY HARD, DULL LOOKING.
	0.89	0.91	0.02	*90	05061		MUDSTONE	
	0.91	0.96	0.05	*90	05061		COAL	C-5

* DENOTES MEASURED BCA

88/11/30 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 2

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88418

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.96	0.99	0.03	*90			CLAYSTONE	LT.GY CLAY STONE.
	0.99	1.10	0.11	*90			MUDSTONE	CARB
	1.10	1.35	0.25	*90			MUDSTONE	BROWN WEATHERED, DK GREY FRESH.

* DENOTES MEASURED BCA
NEWPAGE

FORM 4001

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88419 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/10/88
END DATE - 08/10/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SAMPLE #05062. C/C+R = 1.06/1.40

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1640.00
ZONE - 9
NORTHING - 6301115.00
EASTING - 555395.00

LICENCE/LEASE NUMBER -

LATITUDE - 565109
LONGITUDE - 1280530

- O R I E N T A T I O N -

LENGTH - 3.00
INCLINATION - 22.0
AZIMUTH - 292.0

SIZE WIDTH - 0.6
SIZE HEIGHT - 1.4

ROOF STRIKE - 152
ROOF DIP - 15
ROOF DIR - N
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION
COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88419 SEAM : INTERVAL(M) : 0.44 – 1.84 ELEVATION(M) : 1640.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : NOV 30/88 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.44			0.25	100.0	5062	5062	1.08 / 0.34 1.40		2.42	48.67	20.31	30.60	0.20	10.29
				0.32											
				0.29											
			0.15 0.13												
	1.84			0.20											

qcri coal division	head	proj EVC	BLK XX	DS TRC88419	
sample id	05062	data type (real,boro,aver,calc)			REAL
split sample id	HD1	date analysed	01/09/88		
		analysis basis type (ad,db,ar,em)			AD
name of standard (astm,jis,din,bs,as,gost,iso)		ASTM			

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.20
total moisture %	28.88	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.42	fsi	__._
ash %	46.67	hgi	___._
volatile matter %	20.31	co2 %	__.__
fixed carbon %	30.60		

gross calorific value (mj/kg)	10.29
net calorific value (mj/kg)	__.__

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88419

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			SANDSTONE	FG ROOF ROCK, VERY ARGILLACEOUS, BROWN FRE SH.
	0.25	0.36	0.11	*90			MUDSTONE	CARB VERY WEATHERED.
	0.36	0.44	0.08	*90			CLAYSTONE	LT.GY VERY SOFT.
	0.44	0.69	0.25	*90	05062		COAL	C-5
	0.69	0.74	0.05	*90	05062		MUDSTONE	CARB
	0.74	1.06	0.32	*90	05062		COAL	C-4 GOOD CLEAT, KIND OF DULL, MINOR MUD PARTINGS.
	1.06	1.12	0.06	*90	05062		MUDSTONE	CARB
	1.12	1.35	0.23	*90	05062		COAL	C-5 NUMEROUS MUD PARTINGS.
	1.35	1.41	0.06	*90	05062		COAL	C-3 GOOD CONCHOIDAL FRACTURE, GOOD CLEAT.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88419

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.41	1.51	0.10	*90	05062		MUDSTONE	CARB
	1.51	1.64	0.13	*90	05062		MUDSTONE	FE STAINED.
	1.64	1.84	0.20	*90	05062		COAL	C-4 SOME C-3 WITHIN.
	1.84	2.09	0.25	*90			MUDSTONE	DK.GY FLOOR ROCK, FE STAINED.

* DENOTES MEASURED BCA
NEWPAGE

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88420 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/10/88
END DATE - 08/10/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - SAMPLE #05063. C/C+R = 0.56/0.56

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1603.00
ZONE - 9
NORTHING - 6301095.00
EASTING - 555340.00

LICENCE/LEASE NUMBER -

LATITUDE - 565108
LONGITUDE - 1280533

- O R I E N T A T I O N -

LENGTH - 1.56
INCLINATION - 36.0
AZIMUTH - 120.0

SIZE WIDTH - 0.8
SIZE HEIGHT - 1.4

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 144
FLOOR DIP - 28
FLOOR DIR - N

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION
COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88420 SEAM : INTERVAL(M) : 0.25 – 0.81 ELEVATION(M) : 1603.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : NOV 30/88 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.25			0.56	100.0	5083	5083	0.56/ 0.00 0.56		2.25	42.66	11.26	43.83	0.29	15.01
	0.81														

gcri coal division head proj EVC BLK XX DS TRC88420

sample id 05063 — data type (real,boro,aver,calc) REAL

split sample id HD1 — date analysed 01/09/88

analysis basis type (ad,db,ar,em) AD

name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.29
total moisture %	16.01	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.25	fsi	__._
ash %	42.66	hgi	___.-
volatile matter %	11.26	co2 %	__.__
fixed carbon %	43.83		

gross calorific value (mj/kg) 15.01

net calorific value (mj/kg) __.__

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88420

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			MUDSTONE	ROOF ROCK DK GREY FRESH, VERY FISSILE.
	0.25	0.28	0.03	*90	05063		COAL	C-4 VERY WEATHERED.
	0.28	0.36	0.08	*90	05063		COAL	C-2 VERY BROWN, GOOD CLEAT, FE STAINED, GOO D CONCHOIDAL FRACTURE.
	0.36	0.43	0.07	*90	05063		COAL	C-6 VERY HARD, DULL, BROWN IN COLOR, VERY W EATHERED.
	0.43	0.52	0.09	*90	05063		COAL	C-5 VERY WEATHERED.
	0.52	0.81	0.29	*90	05063		COAL	C-4.8N MUD WITHIN, C-3 THROUGHOUT.
	0.81	1.15	0.34	*90			MUDSTONE	CARB
	1.15	1.40	0.25	*90			MUDSTONE	FLOOR ROCK.

-854- NOW IN CONTACT WITH SYSTEM 2000 -
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-855- NO LONGER IN CONTACT WITH SYSTEM 2000 -

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88421 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/10/88
END DATE - 08/10/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - DID NOT SAMPLE. C/C+R = 0.47/1.25

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1684.00
ZONE - 9
NORTHING - 6301265.00
EASTING - 555445.00

LICENCE/LEASE NUMBER -

LATITUDE - 565114
LONGITUDE - 1280527

- O R I E N T A T I O N -

LENGTH - 3.37
INCLINATION - 30.0
AZIMUTH - 190.0

SIZE WIDTH - 0.7
SIZE HEIGHT - 1.3

ROOF STRIKE - 132
ROOF DIP - 18
ROOF DIR - N
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

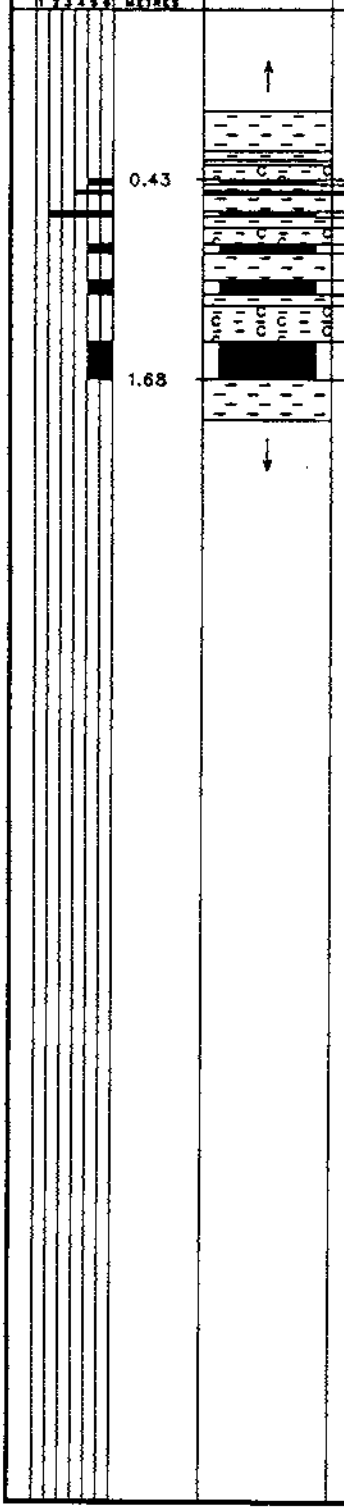
GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88421 SEAM : INTERVAL(M) : 0.43 – 1.68 ELEVATION(M) : 1684.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : FEB 07/89 DRAWING NO. :



SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.43														
			0.11	0.03											
			0.07												
			0.10	0.05											
			0.17		100.0	99999	99999	0.47 / 0.78		—	—	—	—	—	—
				0.03				1.25							
			0.07												
			0.22												
	1.68			0.24											

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88421

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			MUDSTONE	DK.GY ROOF ROCK.
	0.25	0.31	0.06	*90			CLAYSTONE	RUST BROWN WEATHERED.
	0.31	0.34	0.03	*90			MUDSTONE	VERY SOFT, WEATHERED.
	0.34	0.43	0.09	*90			MUDSTONE	CARB MINOR COAL WITHIN.
	0.43	0.46	0.03	*90			COAL	C-5
	0.46	0.50	0.04	*90			CLAYSTONE	M.GY
	0.50	0.52	0.02	*90			COAL	C-4
	0.52	0.63	0.11	*90			MUDSTONE	DK.GY M GREY TO DK GREY.
	0.63	0.66	0.03	*90			COAL	C-2 GOOD CLEAT, CONCHOIDAL FRACTURES.
	0.66	0.73	0.07	*90			MUDSTONE	DK GREY FRESH, ORANGE-BROWN WEATHERED.
	0.73	0.83	0.10	*90			MUDSTONE	CARB

* DENOTES MEASURED BCA

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 2

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88421

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.83	0.89	0.06	*90			COAL	C-5 LOTS OF MUD WITHIN.
	0.89	1.06	0.17	*90			MUDSTONE	ORANGE-BROWN WEATHERED, COAL IN PARTS.
	1.06	1.15	0.09	*90			COAL	C-5.BLK
	1.15	1.22	0.07	*90			CLAYSTONE	LT.GY POSSIBLE BENTONITE.
	1.22	1.44	0.22	*90			MUDSTONE	CARB
	1.44	1.68	0.24	*90			COAL	C-5 VERY MUDDY, C-3 IN PARTS.
	1.68	1.93	0.25	*90			MUDSTONE	FLOOR ROCK, PLANT FRAGMENTS.

* DENOTES MEASURED BCA

NEWPAGE

FORM 4001

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXTRC88422 DATE - 01/16/89

- H I S T O R Y -

START DATE - 08/10/88
END DATE - 08/10/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - DID NOT SAMPLE DUE TO LACK OF COAL. C/C+R = 0.26/0
.26

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1646.00
ZONE - 9
NORTHING - 6301165.00
EASTING - 555425.00

LICENCE/LEASE NUMBER -

LATITUDE - 565110
LONGITUDE - 1280528

- O R I E N T A T I O N -

LENGTH - 2.10
INCLINATION - 30.0
AZIMUTH - 180.0

SIZE WIDTH - 0.5
SIZE HEIGHT - 1.0

ROOF STRIKE - 120
ROOF DIP - 25
ROOF DIR - N
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA CORPORATION

COAL DIVISION

SEAM DETAIL — TRUE THICKNESS

DATA SOURCE: EVC XX TRC88422 SEAM : INTERVAL(M) : 0.25 – 0.51 ELEVATION(M) : 1646.0

GEOLOGIST : MURRAY SCALE: 1:40 DATE : FEB 07/89 DRAWING NO. :

SEAM COMP. 1 2 3 4 5 6	DRILL DEPTH METRES	COAL SEAM LOG	INTERVAL METRES ROCK	INTERVAL METRES COAL	% REC.	SAMPLE ID SIMP	SAMPLE ID COMP	COAL/ROCK TOTAL COMPOS	COAL/ROCK TOTAL MINING SECTION	COAL QUALITY A.D.B. RES MOIST	ASH	VM	FC	TS	CAL.VAL MJ/KG
	0.25														
	0.51			0.26	100.0	99999	99999	0.26/ 0.00 0.26		—	—	—	—	—	—

88/11/17 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: TRC88422

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25	*90			MUDSTONE	DK.GY ROOF ROCK, VERY FISSILE.
	0.25	0.51	0.26	*90			COAL	C-5 VERY WEATHERED, NO BEDDING SEEN.
	0.51	1.07	0.56	*90			MUDSTONE	CARB MINOR COAL PARTINGS, FE STAINED.
	1.07	1.32	0.25	*90			MUDSTONE	ORANGE TO RUST WEATHERED, FLOOR ROCK.

* DENOTES MEASURED BCA
NEWPAGE

FORM 4001

APPENDIX D

1988 MEASURED SECTION DATA AND COAL QUALITY

GULF CANADA CORPORATION - COAL DIVISION

12/JAN/89 PROJECT DATA SOURCE SUMMARY PAGE 1

DATA SOURCE	LOCATION NORTHING	LOCATION EASTING	ELEVATION	LENGTH	ANGLE	AZIMUTH	LOG TYPE
EVCXXOTC88001	6294190.00	549495.00	1710.0	277.0			
EVCXXOTC88002	6294340.00	548380.00	1760.0	131.3			
EVCXXOTC88003	6294730.00	552010.00	1721.0	100.0			
EVCXXOTC88004	6295750.00	552870.00	1676.0	209.8			
EVCXXOTC88005	6294265.00	550805.00	1694.7	116.2			

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXOTC88001 DATE - 01/11/89

- H I S T O R Y -

START DATE - 07/31/88
END DATE - 08/01/88

CONTRACTOR -
GEOLOGIST - WILLIS
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - EVANS CREEK - SOUTH SIDE OF MT JACKSON.

- L O C A T I O N -

PROVINCE - BC
ELEVATION - 1710.00
ZONE - 9
NORTHING - 6294190.00
EASTING - 549495.00

LICENCE/LEASE NUMBER -

LATITUDE - 564727
LONGITUDE - 1281123

- O R I E N T A T I O N -

LENGTH - 276.97
INCLINATION - 0.0
AZIMUTH - 0.0

SIZE WIDTH - 0.0
SIZE HEIGHT - 0.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

89/01/25 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: EVC BLOCK: XX DATA SOURCE: GTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	10.00	10.00	*90			SILTSTONE	SSY.M.GY WEATHERED ORANGE. BRECCIATED, QTZ SCREE . QTZ VEINING.
	10.00	11.70	1.70	*90			SILTSTONE	M.GY.LAM WITH FG SS LENSES AND INTERLAMINATIONS. MUDST RIP-UPS AVERAGE 5MM. BIVALVES (8 8007-2). WEATHERED ORANGE.
	11.70	16.20	4.50	*90			MUDSTONE	SLTY.M.GY.LAM FISSILE; WEATHERED BUFF/ORANGE. 5-10 MM THICK FE STAINED SS LENSES. HEAVILY CL EAVED.
	16.20	22.20	6.00	*90			SILTSTONE	SSY.M.GY WEATHERED ORANGE; FE STAINING. SLTST LE NSES 10-20 CM THICK - 2M WIDE WITH HELM INTHOPSIS. 118/52 N BEDDING. HEAVILY CL EAVED.
	22.20	23.10	0.90	*90			SANDSTONE	PR.M.GY GRITTY; GRANULAR. MODERATE MUDST RIP-UP S (1-3CM) AND LENSES (5-10MM; 10CM LONG). ABUNDANT QTZ BRECCIA IN THE FLOAT. M UDDY.
	23.10	28.60	5.50	*90			SILTSTONE	M.GY WEATHERED ORANGE. RECESSIVE, SCREE COVE RED. HOMOGENEOUS. MUDDY.

* DENOTES MEASURED BCA

89/01/25 GULF CANADA CORPORATION - COAL DIVISION - DESCRIPTIVE LOG PAGE 2

PROJECT: EVC BLOCK: XX DATA SOURCE: GTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	28.60	28.90	0.30	*90			SILTSTONE	M.GY AS ABOVE, WITH HELMINTHOPSIS. HEAVILY C LEAVED.
	28.90	32.65	3.75	*90			SILTSTONE	M.GY WEATHERED ORANGE. HOMOGENEOUS. SCREE CO VERED. MUDDY.
	32.65	32.95	0.30	*90			SILTSTONE	M.GY TYPICAL ORANGE WEATHERED SLTST LENSE (1 OM LONG).
	32.95	37.95	5.00	*90			SILTSTONE	DK.GY WEATHERED M GREY & ORANGE. HEAVILY CLEA VED. MINOR FE STAINING IN SS INTERBEDS (ABUNDANT 1-4 CM THICK WITH HELMINTHOPS IS). 115/54 S CLEAVAGE PLANE. 149/79 W CLEAVAGE PLANE.
	37.95	38.50	0.55	*90			SANDSTONE	SLTY.VFG.M.GY.THKB WEATHERED ORANGE. HIGHLY CLEAVED.
	38.50	38.87	0.37	*90			SANDSTONE	FG.WEL.M.GY.THKB WEATHERED ORANGE. HIGHLY CLEAVED. ABUND ANT MUDST RIP-UPS AT BOTTOM 10 CM (1-4 CM IN SIZE). 139/12 NE BEDDING.

* DENOTES MEASURED BCA

FORM 4001

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	38.87	43.87	5.00	*90			SILTSTONE	DK.GY.LAM VERY FISSILE, WEATHERED M GREY AND ORAN GE. SLTST LENSES M-THK BEDDED, HOMOGENE OUS WITH HELMINTHOPSIS. MOST OF SECTION IS SCREE COVERED. POSSIBLE SYNCLINAL A XIS.
	43.87	44.17	0.30	*90			COAL	BLK VERY WEATHERED, POOR. SPOIL IN HINGE AR EA OF SYNCLINAL AXIS.
	44.17	60.17	16.00	*90			SILTSTONE	CLYY.M.GY WEATHERED BUFF/ORANGE. BEDDING 144/54 N . HIGHLY CLEAVED. SLTY SS LENSES (~30CM) WITH BLACK MUDST RIP-UPS. BIVALVES. B EDDING 163/34 N.
	60.17	63.17	3.00	*90			OVERBURDEN	COVERED INTERVAL.
	63.17	66.67	3.50	*90			SILTSTONE	CLYY.M.GY SAME AS ABOVE. COVERED INTERVAL.
	66.67	68.17	1.50	*90			SANDSTONE	SLTY.FG.M.GY.THNB WEATHERED BUFF/ORANGE. 150/25 N BEDDING . POSSIBLE PLANT FRAGS. BUFF CALCAREOUS WEATHERING. SLTST INTERBEDS. MUDST INT ERLAMS. VERY FISSILE SS INTERVALS. MG.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	68.17	69.35	1.18	*90	08406		COAL	BLK WEATHERED. SEE TRC88401, 70 CM OF ROCK SPLIT IN MIDDLE.
	69.35	74.60	5.25	*90			SANDSTONE	SLTY.M.GY.THNB WEATHERED BUFF/ORANGE LT GREY. 136/78 N BEDDING. SLTST LENSES 1CM THK x 10 CM LONG.
	74.60	77.60	3.00	*90			SILTSTONE	CLYY.DK.GY.LAM WEATHERED BUFF. FISSILE; HIGHLY CLEAVED . RECESSIVE. PARTIALLY SCREE COVERED. A BUNDANT SLTST LENSES ~ 10 CM THICK.
	77.60	78.15	0.55	*90			SANDSTONE	SLTY.FG.M.GY.THKB WEATHERED BUFF. MINOR SLTST INTERLAMS. SEMI-PROMINENT.
	78.15	85.15	7.00	*90			SILTSTONE	M.GY WEATHERED BUFF. FG SS ORANGE INTERLAMS. QTZ VEINS 1-2CM THICK PARALLEL TO BEDD ING.
	85.15	86.15	1.00	*90			OVERBURDEN	COVERED INTERVAL.
	86.15	86.25	0.10	*90			SILTSTONE	SSY.M.GY MS - BUFF/ORANGE. VERY WEATHERED.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	86.25	87.61	1.36	*90	08407		COAL	BLK WEATHERED. SEE TRC88402.
	87.61	87.81	0.20	*90			MUDSTONE	CARB.BLK WEATHERED SOFT. MINOR COAL.
	87.81	88.05	0.24	*90			MUDSTONE	DK.GY SOFT WEATHERED, FE STAINING MINOR.
	88.05	89.05	1.00	*90			SILTSTONE	SSY.M.GY.MAS VERY WEATHERED ORANGE. VERY BROKEN. M B EDDED TO THK BEDDED. MINOR MUDST RIP-UP S. SMALL PLANT FRAGS AND SEEDS.
	89.05	93.55	4.50	*90			SILTSTONE	CLYY.DK.GY.LAM WEATHERED BUFF/ORANGE. 147/28 N. INTERB EDDED CLYY SLTST AND SSY SLTST UNITS. T HNB-LAM. HIGHLY CLEAVED. SEMI-PROMINENT . GETS CLAYEY TOWARDS BASE. BOTTOM DISA PPEAR INTO SCREE.
	93.55	96.55	3.00	*90			SANDSTONE	MG.PR.M.GY.MAS PARTIALLY SCREE COVERED. SLIGHTLY GRANU LAR. QTZ VEINING - 1MM THICK. MINOR MUD ST LAMS.
	96.55	98.55	2.00	*90			COAL	BLK WEATHERED. TRC88406.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	98.55	99.55	1.00	*90			OVERBURDEN	COVERED INTERVAL (CI).
	99.55	100.55	1.00	*90			SILTSTONE	SSY.M.GY WEATHERED BUFF/ORANGE. RECESSIVE; SCREE COVERED. FG SS BANDS (<10 CM THK).
	100.55	103.55	3.00	*90			OVERBURDEN	COVERED INTERVAL.
	103.55	105.05	1.50	*90			SANDSTONE	SLTY.MG.PR.M.GY WEATHERED BUFF/ORANGE. PARTIALLY SCREE COVERED.
	105.05	116.05	11.00	*90			SILTSTONE	DK.GY.LAM WEATHERED ORANGE/BUFF. PLANT FRAGS (PIT YOPHYLLUM NORDENSKIOLDII). HIGHLY CLEAV ED. SCREE COVERED. SO 142/26 N. FG ORAN GE WEATHERED SS INTERBEDS 1-30 CM THICK ; ABUNDANT SMALL PLANT FRAGS & SEEDS.
	116.05	116.99	0.94	*90			COAL	BLK VERY WEATHERED. SCREE COVERED. TRC88407
	116.99	117.99	1.00	*90			MUDSTONE	DK.GY.LAM SCREE COVERED. VBRKN. WEATHERED M.GREY.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	117.99	124.99	7.00	*90			SILTSTONE	M.GY.THNB WEATHERED BUFF/ORANGE. FISSILE. SCREE C OVERED. MINOR PLANT FRAGS. MORE CLAY TO WARDS BASE WITH ORANGE WEATHERED FG SS INTERLAMS.
	124.99	128.24	3.25	*90			OVERBURDEN	COVERED INTERVAL.
	128.24	129.59	1.35	*90			COAL	BLK VERY WEATHERED. TOTALLY SCREE COVERED. TRC88408.
	129.59	132.59	3.00	*90			SILTSTONE	DK.GY.MAS WEATHERED BUFF. HIGHLY CLEAVED.
	132.59	141.09	8.50	*90			SANDSTONE	SLTY.MG.PR.M.GY.MAS WEATHERED ORANGE. MINOR PLANT FRAGS. VE RY MINOR MUDST PARTINGS & SLTST INTERLA MS. MINOR MUDST RIP-UPS IN MIDDLE OF UN IT. SO - 144/12 DEGREE N. SOME SCREE CO VERING.
	141.09	149.09	8.00	*90			OVERBURDEN	COVERED INTERVAL.
	149.09	151.59	2.50	*90			SILTSTONE	SSY.M.GY.MAS.VBRKN VERY WEATHERED (BUFF). SCREE COVERED. H IGHLY CLEAVED. SLTST INTERBEDS 20-50 CM THICK.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	151.59	176.59	25.00	*90			OVERBURDEN	COVERED INTERVAL.
	176.59	179.59	3.00	*90			SILTSTONE	DK.GY.THNB SO 159/12 N. WEATHERED BUFF. PROMINENT UNIT. MINOR FG SS INTERBEDS. SLIGHTLY C LEAVED.
	179.59	188.59	9.00	*90			SANDSTONE	MG.LT.GY.MAS PROMINENT. WEATHERED LT GREY/ORANGE. P NORDENSKIOLDII AND OTHER FRAGS IN THE F LOAT. MINOR MUDST LAMS.
	188.59	189.84	1.25	*90			SILTSTONE	SSY.M.GY.THKB WEATHERED BUFF/ORANGE. SANDIER AT TOP. MINOR FISSILE BANDS. BLOCKY CLEAVAGE SO 159/14 N.
	189.84	200.84	11.00	*90			SILTSTONE	DK.GY.THNB LAMINAE FISSILE, MASSIVE MED BEDS. MOST LY FISSILE. BASE GOES TO SCREE. MORE NO DULAR WEATHERING. RECESSIVE TOWARDS BAS E. HELMINTHOPSIS VISIBLE IN MORE FE STA INED BEDS.
	200.84	208.84	8.00	*90			OVERBURDEN	COVERED INTERVAL.
	208.84	209.04	0.20	*90			COAL	C-3.BLK.PWRD VERY WEATHERED.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	209.04	211.54	2.50	*90			SILTSTONE	CLYY.DK.GY.THNB WEATHERED BUFF. MINOR PLANT FRAGS.
	211.54	218.29	6.75	*90			SANDSTONE	MG.MOD.M.GY.THNB WEATHERED ORANGE/TAN. SLTST INTERBEDS A T TOP. THE BASE HAS FISSILE SLST INTERB EDDED WITH MORE MASSIVE SS. FG SS AT TO P. MINOR PLANT FRAGS AND COALIFIED WOOD FRAGS.
	218.29	218.82	0.53	*90			COAL	C-1 WEATHERED. TRC88409
	218.82	223.57	4.75	*90			MUDSTONE	SLTY.DK.GY.THNB WEATHERED BUFF/BIEGE. VERY FISSILE.
	223.57	227.07	3.50	*90			SANDSTONE	SLTY.VFG.M.GY.MB WEATHERED BUFF. THN MUDST LENSES (1-2MM THICK, 2CM LONG).
	227.07	231.07	4.00	*90			SILTSTONE	SSY.DK.GY.THNB WEATHERED BUFF/ORANGE. UNIT IS PROMINEN T. INTERBEDDED WITH SILTIER FISSILE BED S. LOAD CASTS - UPRIGHT. INTERBEDDED VF G SS & SLTST. 1-2CM THICK COARSENING UP SEQUENCES. 148/24 N SO.
	231.07	231.83	0.76	*90			COAL	C-1.BLK SLIGHTLY WEATHERED. TRC88410.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	231.83	235.58	3.75	*90			MUDSTONE	CARB.BLK.LAM VERY FISSILE. COAL CLASTS (BRECCIA) IN MUDST. COAL STRINGERS UP TO 1CM THICK. DH88008-1 SAMPLE ID.
	235.58	235.70	0.12	*90			SILTSTONE	DK.GY.MB WEATHERED ORANGE/RED. HEMATITE STAINING . SHARP UPPER & LOWER CONTACT. HOMOGENE OUS.
	235.70	240.20	4.50	*90			SANDSTONE	FG.M.GY.MB WEATHERED ORANGE. MINOR FISSILE INTERBE DS 1-5CM THICK. LOTS OF PLANT WOOD FRAG S. B/C FINER GRAINED AT BASE. QTZ VEINS (2CM THK). GRADUAL CONTACT TO CONGLOME RATE.
	240.20	243.70	3.50	*90			CONGLOMERATE	S-P.GY POLYMICTIC - PARACONGL. DOMINANTLY CHER T (ROUNDED) CLASTS - 3MM TO 15MM. ABUND ANT PETRIFIED (COALIFIED) WOOD FRAGS. A C-1 LENSE IS SEEN (5CM x 15CM). MINOR PLANT FRAGS. CG SS MATRIX. THK QTZ VEIN S (2-3CM). CLAST SUPPORTED AT BASE.
	243.70	245.80	2.10	*90			SANDSTONE	MG.M.GY.THKB WEATHERED ORANGE/BUFF. FRIABLE BEDS. QT Z VEINS (<1CM). MINOR SLTST INTERBEDS 1 -2CM THICK.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	245.80	248.55	2.75	*90			SILTSTONE	SSY.DK.GY.MB WEATHER BUFF. INTERBEDDED SS AND SLTST. THIN BEDDED FRIABLE SLTST. FG SS MED-THK BEDDED MORE PROMINENT (M GREY TO BUFF).
	248.55	249.05	0.50	*90			SANDSTONE	SLTY.VFG.M.GY.MB WEATHER BUFF. MED-THK BEDDED. MINOR SLTST INTERBEDS. ~1CM THICK.
	249.05	252.05	3.00	*90			OVERBURDEN	COVERED INTERVAL.
	252.05	257.80	5.75	*90			SANDSTONE	SLTY.MG.M.GY WEATHERED ORANGE. RECESSIVE; SCREE COVERED. ABUNDANT QTZ VEINS (<3CM THK). ABUNDANT FISSILE BEDS 2-10CM THICK NEAR BASE. MINOR PLANT FRAGS. ABUNDANT SLTST BANDS NEAR BASE.
	257.80	260.80	3.00	*90			SILTSTONE	DK.GY WEATHERED BUFF/ORANGE. RECESSIVE, FISSILE, NODULAR WEATHERING.
	260.80	266.90	6.10	*90			SANDSTONE	SLTY.MG.PR.M.GY RECESSIVE; WEATHERED BUFF. SLTST RIP-UPS 1-2CM. MINOR MUDST LAMS.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88001

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	266.90	267.75	0.85	*90			SILTSTONE	M.GY.THKB WEATHERED BUFF/ORANGE. SANDIER AT TOP. CALCAREOUS WEATHERING. MINOR QTZ VEINS.
	267.75	271.00	3.25	*90			SANDSTONE	SLTY.FG.M.GY.THNB WEATHERED BUFF. ABUNDANT FISSILE MUDST INTERBEDS 1-7CM THICK. FISSILE IN SPOTS.
	271.00	271.35	0.35	*90			MUDSTONE	SLTY.DK.GY WEATHERED M-DK GREY AND NODULAR. FISSILE, RECESSIVE. PARTIALLY SCREE COVERED.
	271.35	276.20	4.85	*90			SILTSTONE	SSY.M.GY.THNB WEATHERED ORANGE/RED. FG SS INTERBEDS 1-4CM THICK BECOMING MORE FISSILE AND FINER TOWARDS BASE. MUDST INTERLAMS AT BASE (BOTTOM 20CM). BIVALVES (DH8807-2).
	276.20	276.30	0.10	*90			MUDSTONE	DK.GY WEATHERED M GREY.
	276.30	276.97	0.67	*90			COAL	COAL SEAM DISAPPEARS INTO SCREE. TRC8841I.

* DENOTES MEASURED BCA
NEWPAGE

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GULF CANADA CORPORATION
COAL DIVISION

STRATIGRAPHIC LOG
EWC XX 07CD30D31

GEOLOGIST : WILLIS | DATE : DEC 15/88 | DRAWING NO. :

SCALE : 1:200 1:40

NORTHING 6254.0 E
EASTING 5484.0 E

LITHOLOGIC SYMBOLS

SANDSTONE
SILTSTONE
COAL
OVERBURDEN
MUDSTONE/CLAYSTONE
TUFF
LIMESTONE
CONGLOMERATE

BENTONITE
BRECCIA
CARBONACEOUS
GLAUCF
PYRITE
PERFORMINGS
CONGLOMERATE
FOSSIL BED

SEAM DETAIL

MEASURED DEPTHS (m)

TRUE THICKNESS (m) 1 : 200

MEASURED INTERVAL 1 : 40

TRUE THICKNESS (m)

MEASURED DEPTHS (m)	TRUE THICKNESS (m)	MEASURED INTERVAL	TRUE THICKNESS (m)
43.97		ROCK	COAL
44.17		0.00	0.30
			0.30
68.17		ROCK	COAL
69.35		0.00	1.18
			1.18
96.55		ROCK	COAL
98.55		0.00	2.00
			2.00
116.05		ROCK	COAL
116.89		0.00	0.84
			0.84
128.24		ROCK	COAL
129.59		0.00	1.35
			1.35
208.84		ROCK	COAL
209.04		0.00	0.20
			0.20
218.29		ROCK	COAL
218.82		0.00	0.53
			0.53
230.67		ROCK	COAL
231.63		0.00	0.76
			0.76
276.30		ROCK	COAL
276.97		0.00	0.67
			0.67

TOTAL: 276.97 TOTAL: 276.97

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXOTC88002 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/02/88
END DATE - 08/02/88

CONTRACTOR -
GEOLOGIST - WILLIS
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - UPRIGHT.

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1760.00
ZONE - 9
NORTHING - 6294340.00
EASTING - 548380.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 131.30
INCLINATION - 0.0
AZIMUTH - 0.0

SIZE WIDTH - 0.0
SIZE HEIGHT - 0.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	18.00	18.00	*90			SANDSTONE	MG.MOD.LT.GY.THNB.RIPMK WS - GREY/BUFF. VERY WEATHERED. FRIABLE . MINOR FE STAINED GRAINS.BOTTOMS INTO SCREE. MINOR QTZ VEINS 1-3MM THICK. BED DING 160/10 DEGREE N.
	18.00	23.50	5.50	*90			OVERBURDEN	COVERED INTERVAL.
	23.50	23.85	0.35	*90			COAL	BLK VERY WEATHERED. 5CM - C-5, 10CM - C-2, 10CM - C-3, 10CM - C-4. POWDERED. ROOF ERODED AWAY.
	23.85	24.60	0.75	*90			MUDSTONE	DK.GY.LAM WS - M GREY. THNB-LAM, FISSILE, RECESSI VE.
	24.60	36.35	11.75	*90			SANDSTONE	FG.WEL.M.GY.THKB.RIPMK WS-BUFF, THKB-MAS. PROMINENT, RIPMK A = 1CM, 2 = 5CM. GRADES TO MG SS NEAR BAS E. CONTAINS SSY SLTST LENSES UP TO 30CM THK & 10CM LONG IN BOTTOM 2M. BDG GIVE S INTO SCREE. 50CM BAND OF MUDST RIP-UP S 2M FROM BASE. CLASTS .5-6CM, AVERAGE - 2CM
	36.35	43.85	7.50	*90			OVERBURDEN	COVERED INTERVAL - SCREE. SPOIL SHOWING AT BASE BUT CAN'T DIG DEEP ENOUGH TO I NTERSECT SEAM.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	43.85	57.60	13.75	*90			OVERBURDEN	COVERED INTERVAL.
	57.60	58.50	0.90	*90	08048		COAL	SEE TRC88403.
	58.50	59.75	1.25	*90			MUDSTONE	SLTY.DK.GY.THNB WS - BUFF. RECESSIVE, HIGHLY CLEAVED, N ODULAR WEATHERING.
	59.75	60.40	0.65	*90			MUDSTONE	SSY.PR.DK.GY.THNB WS - BUFF ORANGE. SANDIER AT BASE. HIGH LY CLEAVED. GRADATIONAL TOP & BASE.
	60.40	69.30	8.90	*90			SANDSTONE	CLYY.FG.MOD.M.GY.THNB WS - GREY/PURPLE. THNB-LAM. BLOCKY. SEM I-PROMINENT. MINOR FE STAINED GRAINS. O RANGE WEATHER. SLTST LENSES UP TO 40CM THICK AND 1-2M WIDE. SANDIER AT BASE.
	69.30	69.70	0.40	*90			SILTSTONE	SSY.MOD.M.GY.MB.RIPMK WS - BUFF. MINOR SMALL RIPPLE MARKS. BE DDING 140/22 DEGREE N.
	69.70	72.40	2.70	*90			SANDSTONE	CLYY.FG.MOD.M.GY.THKB AS ABOVE, CLYY SS.
	72.40	76.20	3.80	*90			SILTSTONE	DK.GY.THNB WS - GREY. CLEAVED. NODULAR WEATHERED.

* DENOTES MEASURED BCA

FORM 4001

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	76.20	76.55	0.35	*90			SILTSTONE	M.GY.MB.BIOTR WS - ORANGE. CALCAREOUS WEATHERING. PRO MINENT, HELMINTHOPSIS VISIBLE ON WEATHE RED SURFACE. THICKNESS IS VARIABLE FROM 20-40 CM.
	76.55	79.15	2.60	*90			SILTSTONE	CLYY.DK.GY.THNB WS - M GREY. HIGHLY CLEAVED, NODULAR WE ATHERING, RECESSIVE.
	79.15	79.40	0.25	*90			SILTSTONE	M.GY.THKB WS - ORANGE. PROMINENT; CALCAREOUS WEAT HERING. BIVALVES PRESENT & SAMPLED. BED DING 127/17 N. DH8809-1 SAMPLE ID.
	79.40	93.90	14.50	*90			OVERBURDEN	COVERED INTERVAL.
	93.90	94.55	0.65	*90	08409		COAL	SEE TRC88404.
	94.55	96.05	1.50	*90			MUDSTONE	SLTY.DK.GY.THNB WS - RED/ORANGE. VBRKN, VERY CLEAVED.
	96.05	99.80	3.75	*90			SANDSTONE	SLTY.M.GY.THNB.RIPMK WS - ORANGE/PURPLE. PROMINENT, BLOCKY. VTHNB-LAM. MINOR MUDST INTERLAMS. COARS ENS DOWNWARDS TO FG SS. GRADATIONAL CON TACT AT BASE. RIPPLE MARKS. ROUGHLY SYM METRICAL, A - 1.5CM x 6CM.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	99.80	100.10	0.30	*90			SANDSTONE	FG.WEL.M.GY.VTHNB WS - LT GREY. VERY FRIABLE.
	100.10	100.90	0.80	*90			SILTSTONE	M.GY.MB WS - ORANGE. ABUNDANT PLANT FRAGS IN MA NY BEDS. BIVALVES PRESENT AS WELL, SAMP LED.
	100.90	104.50	3.60	*90			SANDSTONE	MG.WEL.LT.GY.THNB WS - S-P (BUFF & GREY), SEMI-PROMINENT. MORE FRIABLE AT BASE.
	104.50	108.75	4.25	*90			SILTSTONE	SSY.DK.GY.THNB WS - BUFF. PARTIALLY SCREE COVERED. SLT ST @ BASE COARSENS UP TO SSY SLTST. FG SS INTERBEDS 1-3 CM THICK IN BOTTOM 1M.
	108.75	109.15	0.40	*90			SANDSTONE	SLTY.MG.PR.M.GY.THNB WS - ORANGE. FRIABLE. SLTST LENSES 5-20 MM THICK x 5-10CM LONG THROUGHOUT.
	109.15	110.05	0.90	*90			MUDSTONE	SSY.PR.DK.GY WS - DK GREY WITH ORANGE (FE STAINED). SS GRAINS. RECESSIVE, FULLY SCREE COVER ED.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: DYC88002

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	110.05	116.05	6.00	*90			SANDSTONE	MG.M.GY.RIPMK MS - ORANGE. SILTY INTERBEDS 10-30 CM T HICK. RIPPLE MARKS IMPLY TOPS UP. A - 1 CM x 7CM. THNB-THKB. MORE FRIABLE AND R ECESSIVE NEAR BASE. BASE BOTTOMS INTO S CREE.
	116.05	117.85	1.80	*90			OVERBURDEN	COVERED INTERVAL.
	117.85	118.15	0.30	*90			MUDSTONE	CARB.BLK.THNB VERY RECESSIVE, HOMOGENEOUS.
	118.15	119.85	1.70	*90			MUDSTONE	DK.GY.THNB MS - RED/PURPLE. VERY WEATHERED.
	119.85	131.10	11.25	*90			SANDSTONE	FG.M.GY.MB MS - ORANGE. RECESSIVE, MORE FRIABLE AN D THINNER BEDDED NEAR BASE. BOTTOM HALF GRADUALLY GRADES TO MG SS. MINOR SLTST INTERBEDS (ORANGE WEATHERING) 10-30 CM THICK. MINOR PLANT HASH. BOTTOM HALF I S THNB AND FRIABLE. MINOR RIPPLE MARKS.
	131.10	131.30	0.20	*90			SILTSTONE	DK.GY MS - M.GREY. VERY WEATHERED. YBRKN. REC ESSIVE, BASE INTO SCREE.

* DENOTES MEASURED BCA
NEWPAGE

FORM 4001

749

GULF CANADA CORPORATION
COAL DIVISION

STRATIGRAPHIC LOG
EVC XX OTC88002

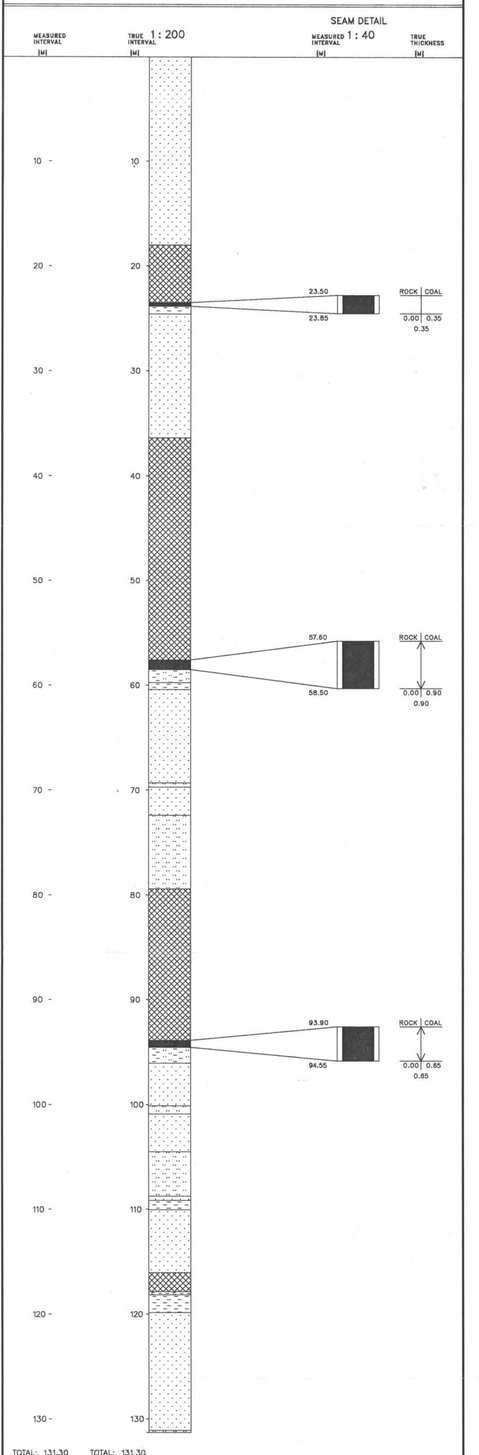
GEOLOGIST : WILLIS	DATE : NOV 24/88	DRAWING NO. :

SCALE : 1:200 (0 – 5 [M]) 1:40 (0 – .5 – 1 [M])

NORTHING: 8294340.0 N
EASTING: 548380.0 E

LITHOLOGIC SYMBOLS

SANDSTONE	BENTONITE
SILTSTONE	BRECCIA
COAL	CARBONACEOUS
OVERBURDEN	QUARTZ
MUDSTONE, CLAYSTONE	PYRITE
TUFF	FERRUGINOUS
LIMESTONE	CONGLOMERATE
COVERED	FOSSIL BED



TOTAL: 131.30 TOTAL: 131.30

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXOTC88003 DATE - 11/14/88

- H I S T O R Y -

START DATE - 07/31/88
END DATE - 07/31/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - MEASURED SECTION ON EAST SLOPE OF MT JACKSON.

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1721.00
ZONE - 9
NORTHING - 6294730.00
EASTING - 552010.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 100.00
INCLINATION - 0.0
AZIMUTH - 0.0

SIZE WIDTH - 0.0
SIZE HEIGHT - 0.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.80	0.80	*90			SANDSTONE	CLYY,LT.BN,MB GREY WEATHERED, LT-M GREY FRESH, MG ABUNDANT CLAY FLAKES, MOD SORTED, MOD BEDDED.
	0.80	1.40	0.60	*90			SANDSTONE	SLTY,VFG,M.GY INTERBEDDED VFG SS, M GREY AND DK GREY SLTST.
	1.40	3.20	1.80	*90			SANDSTONE	LT,BN,THNB GREY WEATHERED, LT-M GREY FRESH, THINLY BEDDED SLTST LAMS AND RIPPLE MARKS INDICATE TOPS UP, SHARP BASAL CONTACT.
	3.20	4.30	1.10	*90			MUDSTONE	SLTY,M,BN,LAM INTERLAMINATED MUDST AND SLTST, WEATHERS M BROWN-GREY, FRESH DK GREY, GRADATIONAL BASAL CONTACT.
	4.30	13.70	9.40	*90			SANDSTONE	SLTY,VFG,BN,MB GRADES INTO INTERBEDDED VFG SS AND SLTST, M BEDDED, SILT BEDS UP TO 20CM THICK, COARSENS DOWNWARD TO MG SS WITH FEWER SLTST LAMS, STRONG CLEAVAGE THROUGHOUT. 100/77 S.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	13.70	26.70	13.00	*90			SANDSTONE	CLYY,FG,BN PREDOMINATELY SLTST WITH INTERBEDDED VFG-FG SS & MUDST, EXTREMELY CLEAVED. SAND BEDS ARE APPROX 15CM THICK AND BROWN WEATHERED, LT-M GREY FRESH, SILT AND MUD ARE DK GREY TOWARDS THE BASE, MUDST DOMINATES.
	26.70	27.20	0.50	*90			MUDSTONE	SLTY,DK.GY MUDST DK GREY, MINOR SLTST AND VERY RARE VERY THIN SANDSTONE BEDS WITHIN SHARP LOWER CONTACT.
	27.20	29.70	2.50	*90			SANDSTONE	FG,M,GY,MB SS FG,GRADES TO MG IN PARTS.
	29.70	42.20	12.50	*90			SANDSTONE	SLTY,LT-M,BN,VTHNB INTERBEDDED VERY THIN BEDDED SS AND SLTST, SAND OFTEN WEATHERS, LT-M BROWN M GREY FRESH, SLTST IS DK GREY, THROUGHOUT SAND ARE NUMEROUS SILT LAMS, RIPPLE MARKS THROUGHOUT INDICATE TOPS UP, GRADES TO SLTST AT BASE.
	42.20	60.20	18.00	*90			SILTSTONE	SSY,DK.GY,VTHNB SLTST DK GREY, VERY THIN BEDDED, WEATHERS TO LT BROWN AND GREY, MINOR SAND LAMINATIONS THROUGHOUT TOWARDS BASE, BECOMES INTERLAMINATED WITH MUDSTONE.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	60.20	61.80	1.60	*90			MUDSTONE	CLYY MUDST LAMINATED VERY SOFT AND CLAYEY, G RADES TO CARB MUD AT BASE, APPROX 10 CM CARB MUD. SHARP BASAL CONTACT WITH SS.
	61.80	67.60	5.80	*90			SANDSTONE	GY.VTHNB SS GREY BROWN WEATHERED, LT GREY-BROWN FRESH, VERY ARGILLACEOUS, VERY THIN BED DED, CHANNEL X-BEDS, TOPS ARE UP.
	67.60	80.70	13.10	*90			MUDSTONE	DK.GY.LAM SHALY MUDST DK GREY, LAMINATED WEATHERS ORANGE-BROWN, THIN BED IS EXTREMELY CO NTORTED AND MEASUREMENTS IS APPROXIMATE .
	80.70	82.70	2.00	*90			MUDSTONE	DK.GY PARTIALLY COVERED, THERE APPEARS TO BE A CARB MUDST DIRECTLY BELOW THE MUD.ABO VE THICKNESS OF APPROX 0.50M, THEN APPR OX .10M OF VERY WEATHERED COAL, C-S BEL OW, THIS IS ANOTHER 1.4M OF MUDST SHARP BASAL CONTACT WITH SS.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88003

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	82.70	100.00	17.30	*90			SANDSTONE	MG.BN SS THICKLY BEDDED AT TOP TO THINLY BEDD ED AT BASE, BROWN-GREY WEATHERED, LT-M GREY FRESH, FAIRLY ARGILLACEOUS, 10% CL AY IN PARTS, PREDOMINATELY MG COARSENS IN PARTS, VERY MINOR MUDST LAMINATIONS.

* DENOTES MEASURED BCA

NEWPAGE

749

GULF CANADA CORPORATION
COAL DIVISION

STRATIGRAPHIC LOG
EVC XX OTC88003

GEOLOGIST : MURRAY	DATE : NOV 24/88	DRAWING NO. :

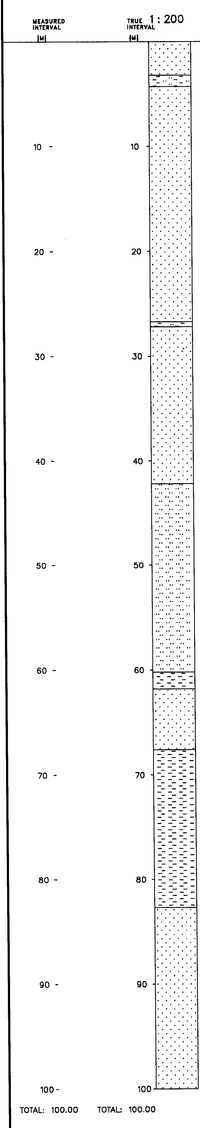
SCALE : 1:200 1:40

0 5 [m] 0 .5 1 [m]

NORTHING: 5294730.0 N
EASTING: 552010.0 E

LITHOLOGIC SYMBOLS

	SANDSTONE		BENTONITE
	SILTSTONE	2 2 2	BRECCIA
	COAL	C C C	CARBONACEOUS
	OVERBURDEN	Q Q Q	QUARTZ
	MUDSTONE, CLAYSTONE	P P P	PYRITE
	TUFF	FE FE FE	FERRUGINOUS
	LIMESTONE	O O O	CONGLOMERATE
	COVERED	f	FOSSIL BED



GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXOTC88004 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/01/88
END DATE - 08/01/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - MEASURED ON EAST FACE OF MT JACKSON. STOPPED DUE T
O STRUCTURE.

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1676.00
ZONE - 9
NORTHING - 6295750.00
EASTING - 552870.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 209.80
INCLINATION - 0.0
AZIMUTH - 0.0

SIZE WIDTH - 0.0
SIZE HEIGHT - 0.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.30	4.30	*90			SANDSTONE	CLYY.MG.MOD.M.GY.MB GREY WEATHERED. ARGILLACEOUS SAND WITH MUDST AND SLTST LAMINATIONS INCREASING TOWARDS BASE. FINES TOWARDS BASE.
	4.30	5.50	1.20	*90			SILTSTONE	SSY.DK.GY.LAM INTERLAMINATED WITH LT GREY FG SS.
	5.50	7.20	1.70	*90			SANDSTONE	FG.MOD.M.GY.THNB
	7.20	9.50	2.30	*90			SILTSTONE	SSY.DK.GY.LAM INTERLAMINATED WITH LT GREY FG SS.
	9.50	13.50	4.00	*90			SANDSTONE	FG.MOD.M.GY.THKB FINES TOWARDS BASE TO VFG SS WITH SLTST AND MUDST LAMINATIONS. GRADATIONAL LOWER CONTACT.
	13.50	21.50	8.00	*90			SILTSTONE	M-DK.GY.THNB INTERBEDDED WITH DK GREY MUDST. FINES TOWARDS BASE WHERE MUDST DOMINATES.
	21.50	29.70	8.20	*90			MUDSTONE	DK.GY.VTHNB CONTAINS MINOR SLTST LAMINATIONS.DK GREY TO BROWN WEATHERED.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	29.70	32.30	2.60	*90			MUDSTONE	SLTY.DK.GY.LAM MINOR VFG SS LENSES AND LAMINATIONS. SHARP BASAL CONTACT.
	32.30	48.50	16.20	*90			SANDSTONE	CLYY.MG.PR.LT-M.GY.THNB RUST BROWN TO M GREY WEATHERED. GRADES IN AND OUT OF FG TO CG, GRADING TO CG TOWARDS BASE. VERY ARGILLACEOUS (RED-BROWN CLAY).
	48.50	52.60	4.10	*90			SILTSTONE	DK.GY.LAM VFG SS LAMINATED WITH SLTST AT TOP. FINING DOWNWARD TO PREDOMINATELY MUDST WITH SILTY &SANDY LAMINATIONS AND LENSES. GRADES BACK INTO SS AT VERY BOTTOM.
	52.60	61.00	8.40	*90			SANDSTONE	FG.MOD.M.GY.THNB GREY TO BROWN WEATHERED. VFG AT TOP COARSENING DOWNWARD TO MG AT BASE, (F.U.S) HIGHLY FRACTURED WITH QTZ FILL. LOWER CONTACT IS COVERED.
	61.00	62.80	1.80	*90			OVERBURDEN	COVERED INTERVAL.
	62.80	64.50	1.70	*90			SILTSTONE	DK.GY.LAM VERY FISSILE. SHARP LOWER CONTACT. MUDST LAMINATIONS.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	64.50	66.50	2.00	*90			SANDSTONE	CLYY.FG.PR.M.GY.THNB GREY WEATHERED - VERY ARGILLACEOUS.
	66.50	74.30	7.80	*90			SILTSTONE	COVERED INTERVAL APPEARS TO BE MAINLY S LTST WITH SLATEY CLEAVAGE.
	74.30	86.90	12.60	*90			SANDSTONE	CLYY.MG.PR.LT-M.GY.MB M GREY TO BROWN WEATHERED, HIGH RED-BRO WN CLAY CONTENT. SHARP BASAL CONTACT.
	86.90	89.00	2.10	*90			SILTSTONE	M-DK.GY.LAM INTERLAMINATED WITH DK GREY MUDST. HELM INTHOPSIS AND MINOR PLANT MASH WITHIN. GRADATIONAL BASAL CONTACT.
	89.00	89.90	0.90	*90			SANDSTONE	VFG.MOD.M.GY.VTHNB RUST BRN TO GREY WEATHERED, SLTST LAMS WITHIN, JOINT SET 140/90, 080/84 E.
	89.90	98.80	8.90	*90			MUDSTONE	DK.GY PARTIALLY COVERED, HIGHLY CLEAVED, SHAR P BASAL CONTACT.
	98.80	113.20	14.40	*90			SANDSTONE	MG.MOD.M.GY.THNB.XBDG RUST BROWN TO M GREY WEATHERED, VERY LI GHT GREY IN COLOUR AT TOP, POSSIBLY ASH INDUCED TOWARDS BASE. CLAYEY MUD PARTI NGS AND SLTST LAMS.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	113.20	127.80	14.60	*90			SANDSTONE	VFG.MOD.M.GY.THNB.RIPMK INTERBEDDED WITH SLTST. M GREY WEATHERE D. SLTST IS M-DK GREY. RIPPLE MARKS ON SILT/SAND CONTACTS. GRADATIONAL BASAL C ONTACT.
	127.80	136.90	9.10	*90			SANDSTONE	FG.MOD.M.GY.THNB AS ABOVE. SILTSTONE CONTAINS NUMEROUS B IVALVE SHELLS, POSSIBLY HYPOXYTOMA. SHA RP BASAL CONTACT.
	136.90	137.30	0.40	*90			MUDSTONE	DK.GY.LAM RED-BROWN WEATHERED. CONTAINS NUMEROUS BIVALVE SHELLS AT THE BASE OF THIS. THE RE IS A POSSIBLE BENTONITE LAYER. SOFT WHITE HIGHLY WEATHERED MUDDY CLAY, 3 CM THICK. SHARP BASAL CONTACT.
	137.30	166.80	29.50	*90			SANDSTONE	FG.MOD.LT-M.GY.MB.RIPMK VFG IN PARTS. NUMEROUS SLTST BANDS UP T O 4CM THICK. CONTAINS RIPPLE MARKS (TOP S UP), LOAD CASTS, RIP-UP CLASTS AND HO OD FRAGMENTS, M GREY TO BROWN WEATHERED . GRADATIONAL LOWER CONTACT.
	166.80	179.10	12.30	*90			SILTSTONE	DK.GY.VTHNB SANDY INTERBEDS AT TOP UP TO 20CM THICK , TOWARDS BASE INTERBEDS ARE PREDOMINAT ELY MUDSTONE.

* DENOTES MEASURED BCA

FORM 4001

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88004

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	179.10	197.10	18.00	*90			SANDSTONE	FG.MOD.LT-M.GY.THNB M GREY TO BROWN WEATHERED, SLTST INTERBEDS 2-3 CM THROUGHOUT. GRADATIONAL BASAL CONTACT.
	197.10	199.80	2.70	*90			SILTSTONE	M-DK.GY.LAM GREY TO BROWN WEATHERED, INTERLAMINATED WITH VFG SS. HELMINTHOPSIS. SHARP BASAL CONTACT.
	199.80	206.00	6.20	*90			SANDSTONE	MG.PR.LT-M.GY.THNB SLTST INTERBEDS UP TO 4CM. MINOR MUD INTERBEDS. M GREY WEATHERED. TOWARDS BASE SAND BECOMES FG. GRADATIONAL BASAL CONTACT.
	206.00	209.80	3.80	*90			SILTSTONE	M-DK.GY.LAM INTERLAMINATED WITH VFG SS AND MUDST. SECTION TERMINATED DUE TO STRUCTURE.

* DENOTES MEASURED BCA

NEWPAGE

FORM 4001

749

GULF CANADA CORPORATION
COAL DIVISION

STRATIGRAPHIC LOG
EVC XX OTC88004

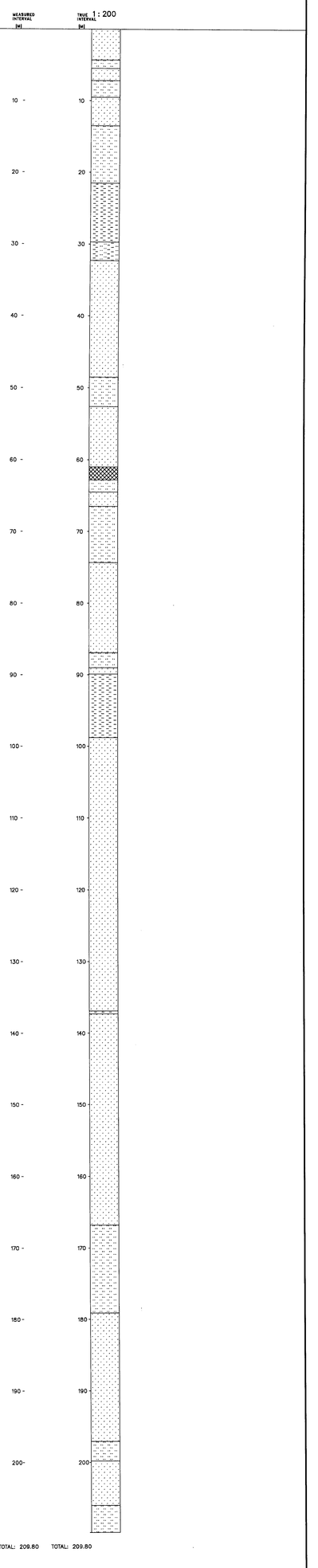
GEOLOGIST : MURRAY	DATE : NOV 24/88	DRAWING NO. :

SCALE : 1:200 1:40

NORTHING: 6295750.0 N
EASTING: 552670.0 E

LITHOLOGIC SYMBOLS

SANDSTONE	BENTONITE
SILTSTONE	BRECCIA
COAL	CARBONACEOUS
OVERBURDEN	QUARTZ
MUDSTONE,CLAYSTONE	PYRITE
TUFF	FERRUGINOUS
LIMESTONE	CONGLOMERATE
COVERED	FOSSIL BED



TOTAL: 209.80 TOTAL: 209.80

GULF CANADA CORPORATION

- D A T A S O U R C E S U M M A R Y -

DATA SOURCE - EVCXXOTC88005 DATE - 11/14/88

- H I S T O R Y -

START DATE - 08/02/88
END DATE - 08/02/88

CONTRACTOR -
GEOLOGIST - MURRAY
OPERATOR - G.C.R.L.
SURVEYOR -

REMARKS - MEASURED SECTION ON SE SLOPE OF MT JACKSON, TOTAL LENGTH IS 116.15 M.

- L O C A T I O N -

PROVINCE - B.C.
ELEVATION - 1694.69
ZONE - 9
NORTHING - 6294265.00
EASTING - 550805.00

LICENCE/LEASE NUMBER -

LATITUDE - 0
LONGITUDE - 0

- O R I E N T A T I O N -

LENGTH - 116.15
INCLINATION - 0.0
AZIMUTH - 0.0

SIZE WIDTH - 0.0
SIZE HEIGHT - 0.0

ROOF STRIKE - 0
ROOF DIP - 0
ROOF DIR -
FLOOR STRIKE - 0
FLOOR DIP - 0
FLOOR DIR -

*** NOTE *** 0 INDICATES NO VALUE

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	20.50	20.50	*90			SANDSTONE	MG.M.GY.VTHNB WEATHERED BUFF TO ORANGE, VERY THIN BED S ABOVE THIS APPEARS OVERLAIN BY ORANGE /BROWN SLTST. M-DK GY FRESH CONTAINS PL ANT FRAGMENTS, MINOR CLAY PARTINGS, MIN OR COALIFIED PLANT FRAGMENTS, QTZ AND M UD FILLED FRACTURES, SMALL SCALE FAULTS .
	20.50	24.70	4.20	*90			SANDSTONE	CLYY.MG.THNB FG IN PARTS, THIN BEDDED, VERY THIN BED DED IN PARTS.
	24.70	24.90	0.20	*90			SANDSTONE	CLYY.ORNG CLAYEY SS, VERY WEATHERED, ORANGE COLOU RED.
	24.90	25.35	0.45	*90			COAL	C-5.BLK C-5 OVERALL, VERY WEATHERED, ORANGE FE STAINING AND CARB MUD PARTINGS THROUGHO UT.
	25.35	31.35	6.00	*90			MUDSTONE	SLTY.DK.GY DK GREY WEATHERS TO LT GREY-ORANGE FISS ILE, COALIFIED PLANT FRAGMENTS TOWARDS BASE, SLTST LAMS OCCURS FREQUENTLY.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	31.35	31.75	0.40	*90			MUDSTONE	CARB.BLK MUDST CARB, BLK COALIFIED PLANT FRAGMEN TS THROUGHOUT.
	31.75	32.65	0.90	*90			MUDSTONE	DK.GY MUDST DK GREY FISSILE, ORANGE-GREY WEAT HERED, GRADES TO SLTST BELOW.
	32.65	39.95	7.30	*90			SILTSTONE	CLYY.M-DK.GY ORANGE-BROWN/GREY WEATHERING, MUDST PAR TINGS WITHIN SOME OF WHICH ARE CARBONAC EOUS, COARSENS DOWNWARD TO A SANDY SILT AND FINALLY SS 153/28 DEG SM.
	39.95	41.95	2.00	*90			SANDSTONE	SLTY.FG.LT-M.GY.MB RED-BRN WTHRD, MB, SLTST INTERBEDS 2-3C M THK, OFTEN SHOW RIPMK (TOPS UP), RIP- UP CLASTS, APPEARS TO BE NUMEROUS WELL ROUNDED POD LIKE THINGS MADE OF SLTST, FAIRLY DIRTY, SS GRADES TO SLTST BELOW. ACROSS CREEK BEDS SEEM TO CHANGE ORIEN T 022/16
	41.95	45.95	4.00	*90			SILTSTONE	M-DK.GY ORANGE BROWN TO GREY WEATHERED, VERY FI SSILE, SANDY LENSES AND BEDS W/IN, PLAN T FRAGMENTS THROUGHOUT.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	45.95	48.75	2.80	*90	05064		COAL	C-3 COAL NUMEROUS CARB MUD PARTINGS BUT COA L SHOULD BE TRENCHED, NUMEROUS BAND OF C-3 AND POSSIBLY C-2? FLOOR IS MUDST. G RAB SAMPLE TESTED FOR COAL QUALITY.
	48.75	53.75	5.00	*90			MUDSTONE	DK.GY MUDST DK GREY CARB IN PARTS. COARSENS T OWARDS BASE TO SLTST.
	53.75	56.25	2.50	*90			SILTSTONE	M-DK.GY SLTST M-DK GREY GRADES TO SANDSTONE BEL OW.
	56.25	60.25	4.00	*90			SANDSTONE	SLTY.VFG SS VFG AT TOP, VERY SLTY AT TOP. NUMERO US SLTST LAMINATIONS AND CLASTS BECOMES LESS SITLY TOWARDS BASE, GRADES BACK T O SLTST AT BASE.
	60.25	67.75	7.50	*90			SILTSTONE	M-DK.GY M GREY WEATHERED, SANDY LENSE AT TOP BE COMING INCREASINGLY MUDDY TOWARDS BASE.
	67.75	83.35	15.60	*90			SANDSTONE	CLYY.FG.PR SS CLEANING UP TOWARDS BASE, FG AT BASE PARTIALLY COVERED.

* DENOTES MEASURED BCA

PROJECT: EVC BLOCK: XX DATA SOURCE: OTC88005

BOX	DEPTH FROM	DEPTH TO	INTRVAL THICK.	BCA	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	83.35	94.25	10.90	*90			OVERBURDEN	COVERED INTERVAL APPEARS TO BE PREDOMIN ATELY SLTST WITH SOME MUDST.
	94.25	95.45	1.20	*90			MUDSTONE	PARTIALLY COVERED.
	95.45	100.55	5.10	*90			SILTSTONE	SSY SLTST - MUDDY AT TOP, SANDY AT BASE, WE ATHERS AS SILT ABOVE, GRADES INTO SAND BELOW.
	100.55	101.65	1.10	*90			SANDSTONE	LT-M.GY SS - BROWN-GREY, LT-M GREY FRESH, ARGIL LACEOUS. SHARP BASAL CONTACT WITH MUDST BELOW.
	101.65	104.65	3.00	*90			MUDSTONE	SLTY MUDST SLIGHTLY CARB AT TOP, BECOMING SI LTY NEAR BASE, SILT LAMINATION AND NODU LES THROUGHOUT, INCREASING TO BASE, GRA DES TO SILTSTONE.
	104.65	116.15	11.50	*90			SANDSTONE	MG.LT-M.GY SS - BROWN-GREY WEATHERED, LT-M GREY FR ESH, THINLY BEDDED, NOT AS ARGILLACEOUS AS THOSE ABOVE, ELEV 5285 FT.

gcri coal division head proj EVC BLK XX DS OTC88005

sample id 05064 data type (real,boro,aver,calc) REAL
split sample id HD1 date analysed 01/09/88
analysis basis type (ad,db,ar,em) AD
name of standard (astm,jis,din,bs,as,gost,iso) ASTM

top size (mm)	35.00		
surface moisture %	__.__	total sulphur %	0.23
total moisture %	12.35	phosphorous %	_.___
equilibrium moisture %	__.__	chlorine (ppm)	_____
		specific gravity	_.__
residual moisture %	2.10	fsi	__._
ash %	47.70	hgi	___._
volatile matter %	7.39	co2 %	__.__
fixed carbon %	42.81		

gross calorific value (mj/kg) 15.65
net calorific value (mj/kg) __.__

749

GULF CANADA CORPORATION
COAL DIVISION

STRATIGRAPHIC LOG
EVC XX 07C88005

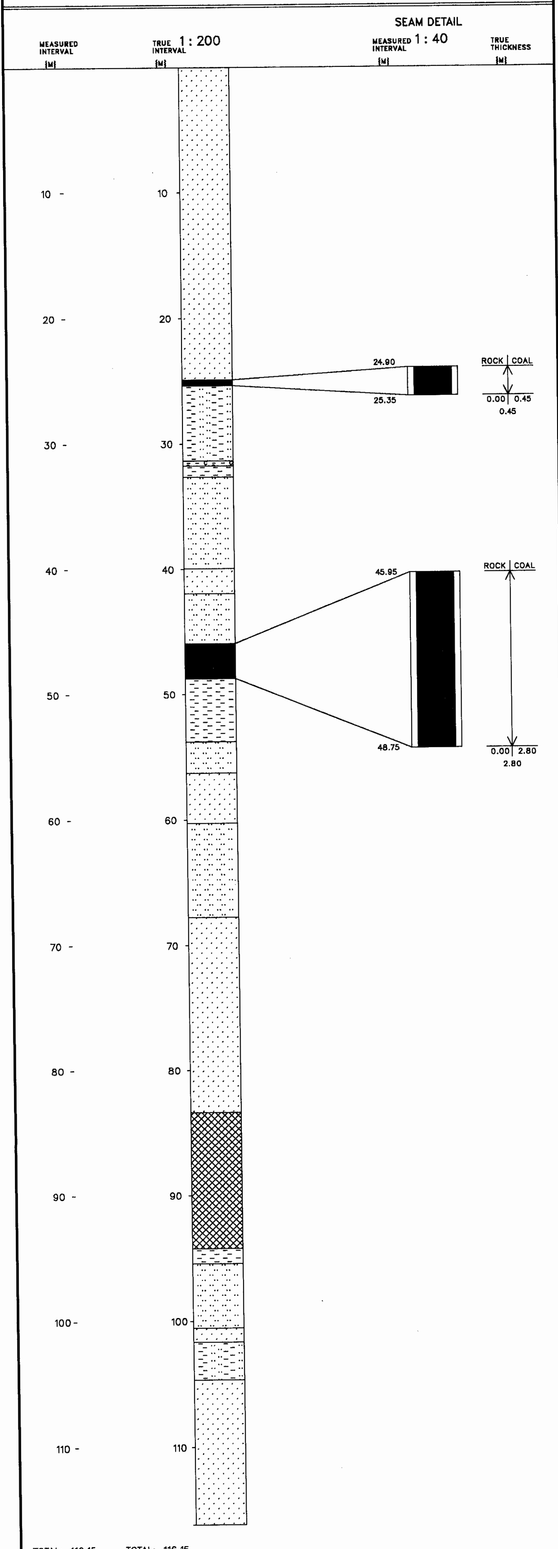
GEOLOGIST : MURRAY	DATE : NOV 24/88	DRAWING NO. :

SCALE : 1:200 1:40

NORTHING: 6294265.0 N
EASTING: 550805.0 E

LITHOLOGIC SYMBOLS

SANDSTONE		BENTONITE	
SILTSTONE		BRECCIA	
COAL	C C C	CARBONACEOUS	
OVERBURDEN	Q Q Q	QUARTZ	
MUDSTONE,CLAYSTONE	P P P	PYRITE	
TUFF	FE FE FE	FERRUGINOUS	
LIMESTONE		CONGLOMERATE	
COVERED	F	FOSSIL BED	



TOTAL: 116.15 TOTAL: 116.15

APPENDIX E

FOSSIL SAMPLES

SAMPLE NUMBER	GEOGRAPHIC LOCATION	STRATIGRAPHIC LOCATION	IDENTIFICATION (IF KNOWN)
SL8800907	south side of Mt. Jackson	Groundhog	Ammonite bivalves: Nerogina ? Hypoxytoma ? Somapecten ? Staffinella ?
DW8800701	south side of Mt. Jackson	Groundhog	bivalves: Astarte ?
DW8800702	south side of Mt. Jackson	Groundhog	Ferganoconcha
DW8800902	south side of Mt. Jackson	Groundhog	Buchia fisheriana
SL8800706	forks of Jackson Ck.	Groundhog	bivalves
SL8800807	forks of Jackson Ck.	Groundhog	helminthopsis
SL8801004	east end of Mt. Jackson, north face	Groundhog	bivalves (sampled) Nilssonia canadensis Nilssonia sp. Pterophyllum rectangulare Cladophlebis virginiensis martiniana
SL8801105	Discovery Ck.	Groundhog	Pityophyllum nordenskioldii Czekanowskia rigida
SL8801301	OTC88001	Groundhog	bivalve (sampled)
SL8801302	OTC88002	Groundhog	bivalve (sampled)
SL8801303	Venture Ridge	Malloch ?	bivalve (sampled)
GM8801002	Venture Ridge	Malloch ?	belemnites bivalves

APPENDIX F

SPECULATIVE COAL RESOURCES CALCULATIONS

APPENDIX F

EVANS CREEK PROPERTY : SPECULATIVE RESOURCE CALCULATIONS

AREA : EVANS CREEK COAL PROPERTY
RESOURCE TYPE: SPECULATIVE

PROPERTY LICENCES	SURFACE AREA (m^2)	x	SPECIFIC GRAVITY (Tn/m^3)	x	CUMULATIVE COAL THICKNESS (m)	=	TOTAL TONNES COAL
1988	34,000,000		1.85		7.70		484,330,000
1984	74,000,000		1.85		7.70		1,054,130,000
TOTALS:	108,000,000 m^2						1,538,460,000 Tonnes

TOTAL SPECULATIVE TONNAGE OF THE ENTIRE EVANS CREEK RESOURCE AREA: 1,538,460,000 TONNES

APPENDIX G

1:500 000 NORTHWEST BRITISH COLUMBIA MAP

NORTHWEST BRITISH COLUMBIA

749

GULF CANADA CORPORATION

SCALE 1: 500,000

Kilometres 10 5 0 10 20 30 40 50 Kilometres

Miles 5 0 10 20 30 Miles

Legend

- Paved Highway
- Gravel Highway
- Gravel Road (Restricted use)
- Proposed Road
- Railway
- Existing Transmission Lines
- Proposed Transmission Lines
- Electrical Sub Stations
- Proposed Dam Site
- Proposed Pit, Mount Klappan Property
- Boundary, Park or Reserve
- Boundary, International
- Spot Elevation (feet above sea level)
- Mine (see separate list)
- Prospect
- Cities, Towns
- Contours (1000 foot interval)

COAL PROPERTIES

- GULF CANADA PROPERTIES LTD.
- SUNCOR INC.
- DOMINION ANTHRACITE LTD.
- SHELL CANADA RESOURCES INC.
- D. GROOT LOGGING LTD.
- ESSO RESOURCES CANADA LTD.
- ASHTON W. MULLAN
- JOE HIDBER

MINES

2 DUTHIE — Ag, Pb, Zn, Au, Cd, Cu
3 SILVER STANDARD — Ag, Pb, Zn, Au, Cu
4 KITSAULT — Mo
5 SCOTTIE GOLD — Au, Ag
6 GRANDUC — Cu, Ag, Au
7 BAKER — Au, Ag

Produced jointly by GULF CANADA DRAFTING DEPT. and HARDY ASSOC. (1978) LTD., MAPPING SECTION.
Revised to Sept. 1986

This map has been compiled by Gulf from several sources and is presented as a convenience to the user. Gulf does not guarantee or warrant its accuracy in any respect. Any reliance placed on this map is at the user's risk.

REFERENCE NOTE

Mines: from The Northwest Region - B.C. Regional Economic Study, 1982.

Prospects: from Kitimat-Stikine Regional District - 1:500,000 Regional Resource Map, 1981.

Base Map: from Dept. of Energy, Mines and Resources, Surveys and Mapping Branch, current N.T.S. series maps.

KEY MAP

Evans Creek 1988
Coal Quality
and
Petrography Data.

OPEN FILE
~~CONFIDENTIAL~~

749

TABLE 8.1

EVANS CREEK COAL PROPERTY: 1988 AVERAGE COAL QUALITY ANALYSES SUMMARY

1988 DATA SOURCE	TOTAL MOISTURE (%)	RESIDUAL MOISTURE (%)	PROXIMATE ANALYSIS ASH (%)	VOLATILE MATTER (%)	FIXED CARBON (%)	SULPHUR (%)	VITRINITE REFLECTANCE (Ro Max %)	GROSS CALORIFIC VALUE (MJ/kg)	(cal/g)
TRC88401	27.87	2.32	46.63	21.88	29.17	0.29	-	11.20	2677
TRC88402	21.87	2.69	56.92	16.09	24.30	0.16	4.21	9.51	2273
TRC88403	10.43	2.23	41.62	7.20	48.95	0.41	5.12	17.37	4152
TRC88404	18.54	3.33	34.11	13.87	48.69	0.28	-	18.01	4304
TRC88405	-	-	-	-	-	-	-	-	-
TRC88406	24.04	2.25	62.82	15.76	19.17	0.27	-	7.23	1728
TRC88407	26.45	2.63	51.03	18.55	27.79	0.15	-	10.36	2476
TRC88408	26.77	2.86	30.27	20.69	46.18	0.23	-	16.19	3870
TRC88409	10.27	1.38	37.12	6.74	54.76	0.40	-	16.60	3967
TRC88410	12.27	2.25	15.23	9.29	73.23	0.35	5.31	26.53	6341
TRC88411	-	-	-	-	-	-	-	-	-
TRC88412	31.18	2.03	33.80	23.62	40.55	0.27	4.43	14.41	3444
TRC88413	18.72	2.17	17.93	15.33	64.57	0.31	4.07	22.62	5406
TRC88414	14.32	2.57	34.94	12.59	49.90	0.41	5.26	18.40	4398
TRC88415	-	-	-	-	-	-	-	-	-
TRC88416	-	2.84	22.60	6.88	67.68	0.34	4.98	24.50	5856
TRC88417	28.97	2.42	59.17	16.20	22.21	0.14	6.07	8.14	1946
TRC88418	14.61	2.89	40.60	9.45	47.06	0.31	-	16.78	4011
TRC88419	28.88	2.42	46.67	20.31	30.60	0.20	-	10.29	2459
TRC88420	16.01	2.25	42.66	11.26	43.83	0.29	6.37	15.01	3587
TRC88421	-	-	-	-	-	-	-	-	-
TRC88422	-	-	-	-	-	-	-	-	-
OTC88001	-	-	-	-	-	-	-	-	-
OTC88002	-	-	-	-	-	-	-	-	-
OTC88003	-	-	-	-	-	-	-	-	-
OTC88004	-	-	-	-	-	-	-	-	-
OTC88005	12.35	2.10	47.70	7.39	42.81	0.23	5.28	15.65	3740
AVERAGE VALUES:	20.21	2.42	40.10	14.06	43.41	0.28	5.11	15.49	3702

CONFIDENTIAL

The Discovery Creek seam is the thickest uncovered during the 1988 season and has the highest gross calorific value as well as a high fixed carbon and low sulphur content. The two other seams are thinner and have slightly less favourable analyses but are still quite acceptable.

The average vitrinite reflectance value for the southern Evans Creek property is 5.11 $\bar{R}_o$ max% from a sample size of ten. The maximum value of 6.37 $\bar{R}_o$ max% was from the easternmost data point on Pyramid Bluff, northeast of Mt. Jackson. A value of 4.91 $\bar{R}_o$ max% represents the average for all nineteen samples from Evans Creek.

Work done to date in the northcentral portion of the Bowser Basin, although clustered in areas great distances apart, tends to indicate changes in coal quality as one moves southeasterly through that part of the basin. A general southeastward trend of increased vitrinite reflectance and, therefore, increased coal maturity is apparent. These southeastern seams, however, tend to have more rock splits, higher ash values, and conversely lower fixed carbon values than their northwestern counterparts, often resulting in lower gross calorific values. It should be noted, however, that moisture and ash content affect the calorific value of a sample, and that the high moisture content present in the Evans Creek weathered samples may have resulted in the lower calorific values in the southeast area.

TABLE 8.2

EVANS CREEK COAL PROPERTY: MOST PROMISING 1988 TRENCHES

1988 DATA SOURCE	COAL/ COAL+ROCK RATIO (m)	RESIDUAL MOISTURE (%)	PROXIMATE ANALYSIS ASH (%)	VOLATILE MATTER (%)	FIXED CARBON (%)	SULPHUR (%)	VITRINITE REFLECTANCE (Ro Max %)	GROSS CALORIFIC VALUE (MJ/kg)	(cal/g)
TRC88403*	0.71/0.77	2.23	41.62	7.20	48.95	0.41	5.12	17.37	4152
TRC88404	0.48/0.57	3.33	34.11	13.87	48.69	0.28	-	18.01	4304
TRC88414*	0.84/1.22	2.57	34.94	12.59	49.90	0.41	5.26	18.40	4398
TRC88416	1.62/2.01	2.84	22.60	6.88	67.68	0.34	4.98	24.50	5856
AVERAGE VALUES:	0.91/1.14	2.74	33.32	10.14	53.81	0.36	3.84	19.57	4677

* - trenches which intersect the same seam.

Vitrinite Reflectance

GULF CANADA
Sample #08407

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	4.21
Standard Error of the Mean	.03
Coefficient of Variation...%	6.27
Variance	.0697
Standard Deviation	.2640
Skewness	.3310
Kurtosis	2.2949

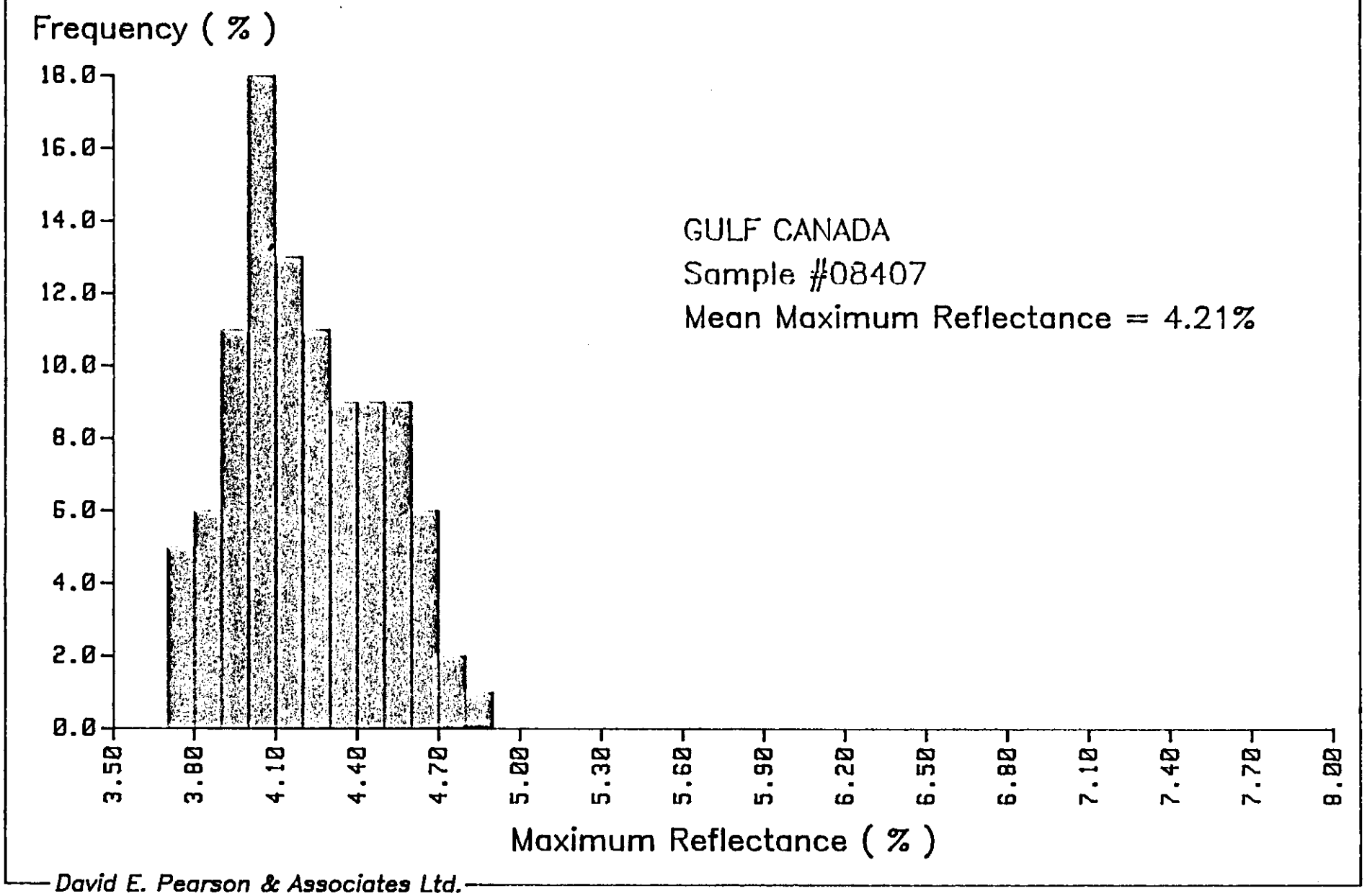
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
3	3.70	5	5.00
4	3.80	6	6.00
5	3.90	11	11.00
6	4.00	18	18.00
7	4.10	13	13.00
8	4.20	11	11.00
9	4.30	9	9.00
10	4.40	9	9.00
11	4.50	9	9.00
12	4.60	6	6.00
13	4.70	2	2.00
14	4.80	1	1.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V37	5.00
V38	6.00
V39	11.00
V40	18.00
V41	13.00
V42	11.00
V43	9.00
V44	9.00
V45	9.00
V46	6.00
V47	2.00
V48	1.00

VITRINITE HISTOGRAM



David E. Pearson & Associates Ltd.

Vitrinite Reflectance

GULF CANADA
Sample #08408

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	5.12
Standard Error of the Mean	.02
Coefficient of Variation...%	4.12
Variance	.0445
Standard Deviation	.2109
Skewness	-.1950
Kurtosis	2.2589

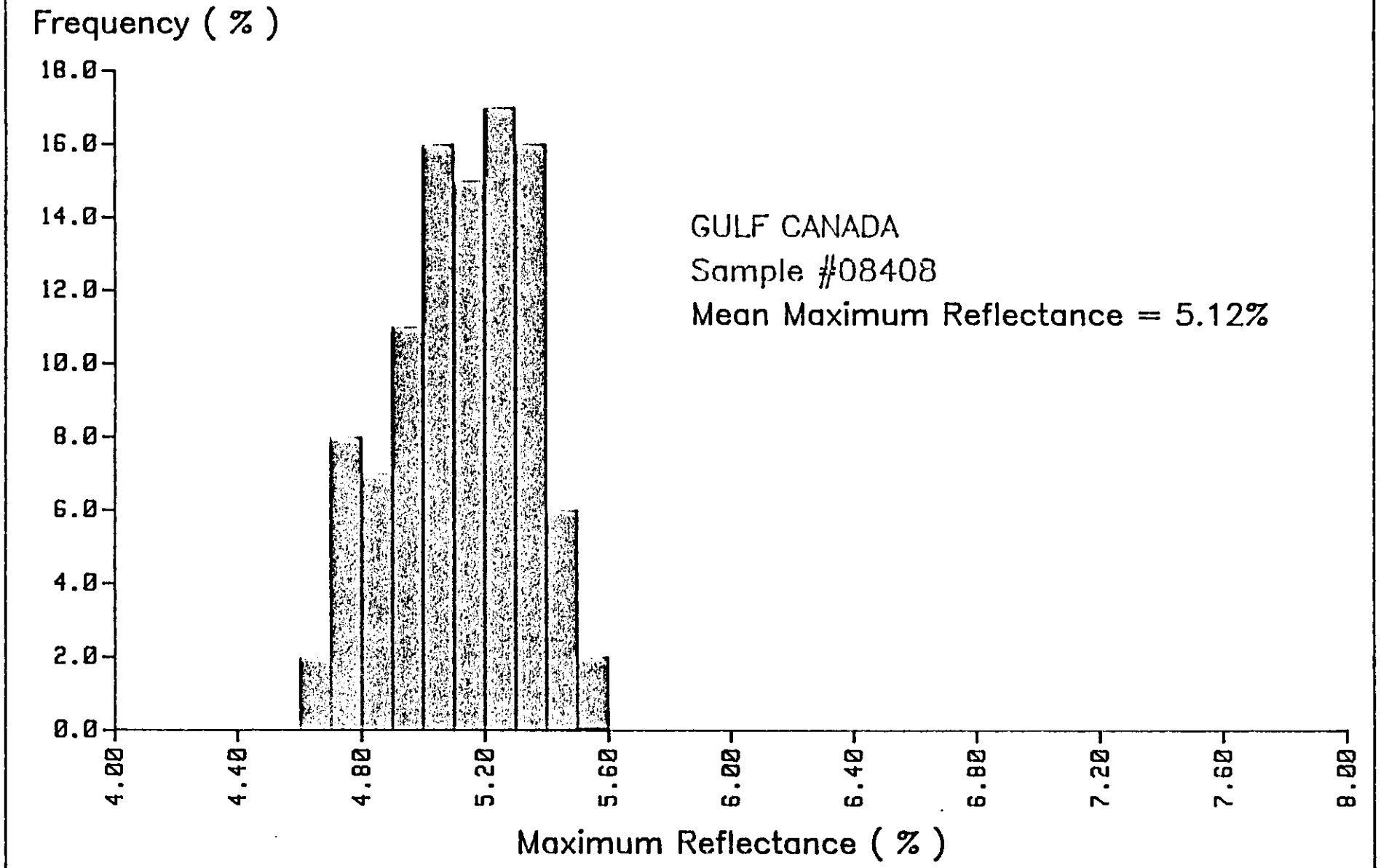
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
7	4.60	2	2.00
8	4.70	8	8.00
9	4.80	7	7.00
10	4.90	11	11.00
11	5.00	16	16.00
12	5.10	15	15.00
13	5.20	17	17.00
14	5.30	16	16.00
15	5.40	6	6.00
16	5.50	2	2.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V46	2.00
V47	8.00
V48	7.00
V49	11.00
V50	16.00
V51	15.00
V52	17.00
V53	16.00
V54	6.00
V55	2.00

VITRINITE HISTOGRAM



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Vitrinite Reflectance

GULF CANADA
Sample #05055

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	5.31
Standard Error of the Mean	.02
Coefficient of Variation...%	3.55
Variance	.0355
Standard Deviation	.1884
Skewness	.1434
Kurtosis	2.6312

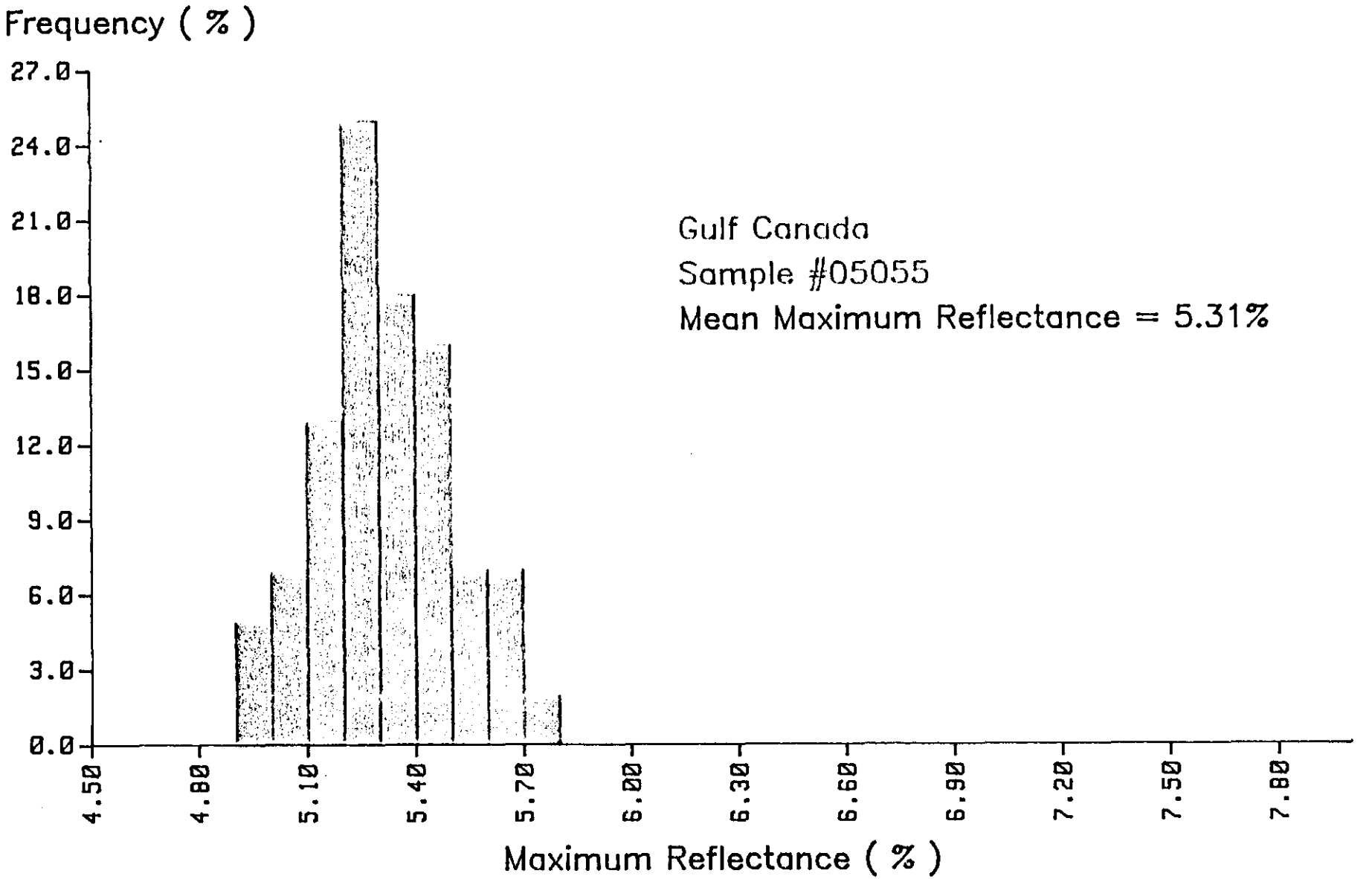
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
5	4.90	5	5.00
6	5.00	7	7.00
7	5.10	13	13.00
8	5.20	25	25.00
9	5.30	18	18.00
10	5.40	16	16.00
11	5.50	7	7.00
12	5.60	7	7.00
13	5.70	2	2.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V49	5.00
V50	7.00
V51	13.00
V52	25.00
V53	18.00
V54	16.00
V55	7.00
V56	7.00
V57	2.00

VITRINITE HISTOGRAM



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Vitrinite Reflectance

GULF CANADA
Sample #05056

BASIC STATISTICS

Total Number of Observations	100
Observations Selected for Statistics	60
Mean Maximum Reflectance (Romax)...%	4.43
Standard Error of the Mean	.03
Coefficient of Variation...%	5.21
Variance	.0533
Standard Deviation	.2310
Skewness	.4854
Kurtosis	2.9182

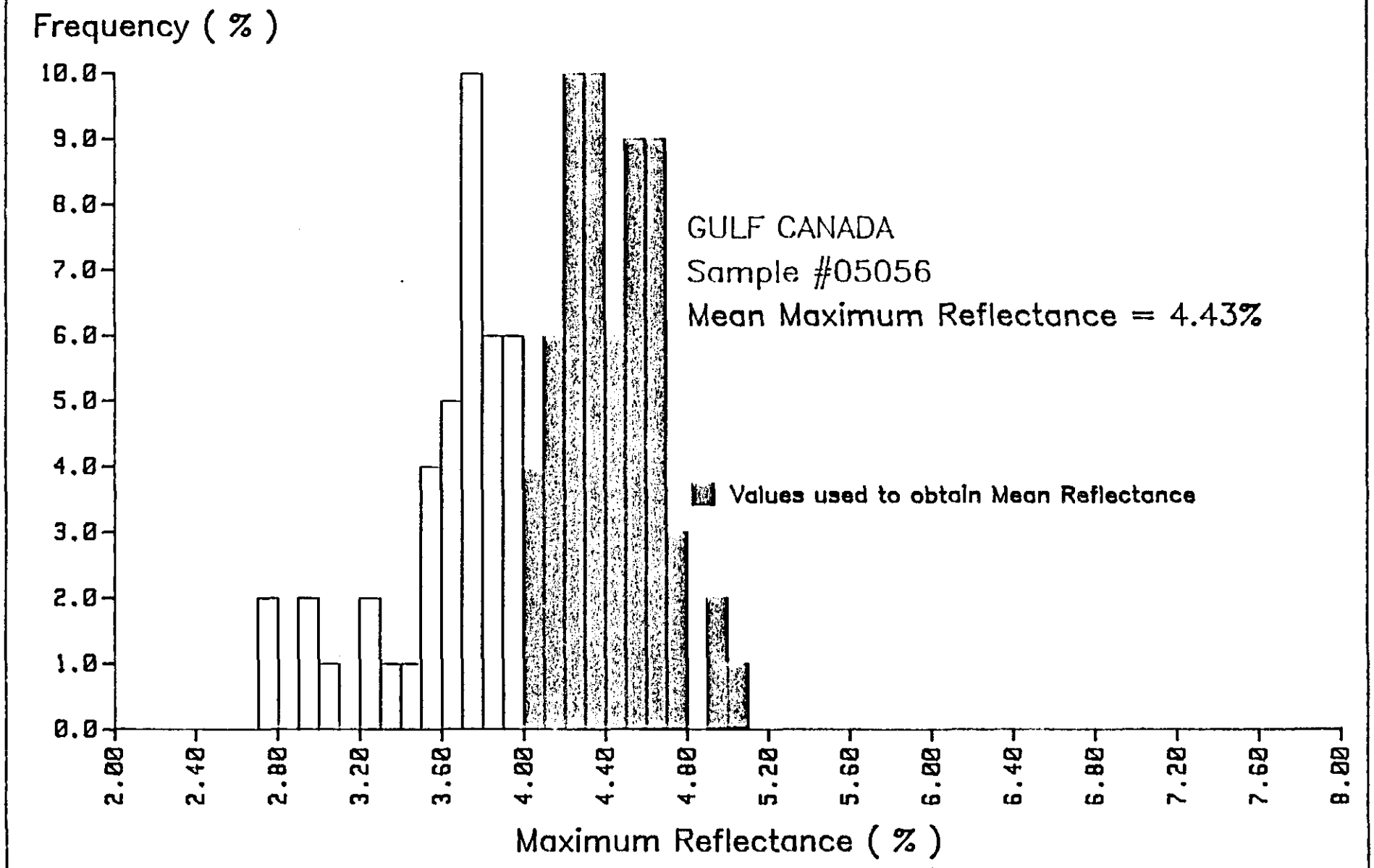
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
1	4.00	4	6.67
2	4.10	6	10.00
3	4.20	10	16.67
4	4.30	10	16.67
5	4.40	6	10.00
6	4.50	9	15.00
7	4.60	9	15.00
8	4.70	3	5.00
10	4.90	2	3.33
11	5.00	1	1.67

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V39	
V40	6.67
V41	10.00
V42	16.67
V43	16.67
V44	10.00
V45	15.00
V46	15.00
V47	5.00
V49	3.33
V50	1.67

VITRINITE HISTOGRAM



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Vitrinite Reflectance

GULF CANADA
Sample #05057

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	4.07
Standard Error of the Mean	.02
Coefficient of Variation...%	3.99
Variance	.0265
Standard Deviation	.1627
Skewness	.4422
Kurtosis	3.0345

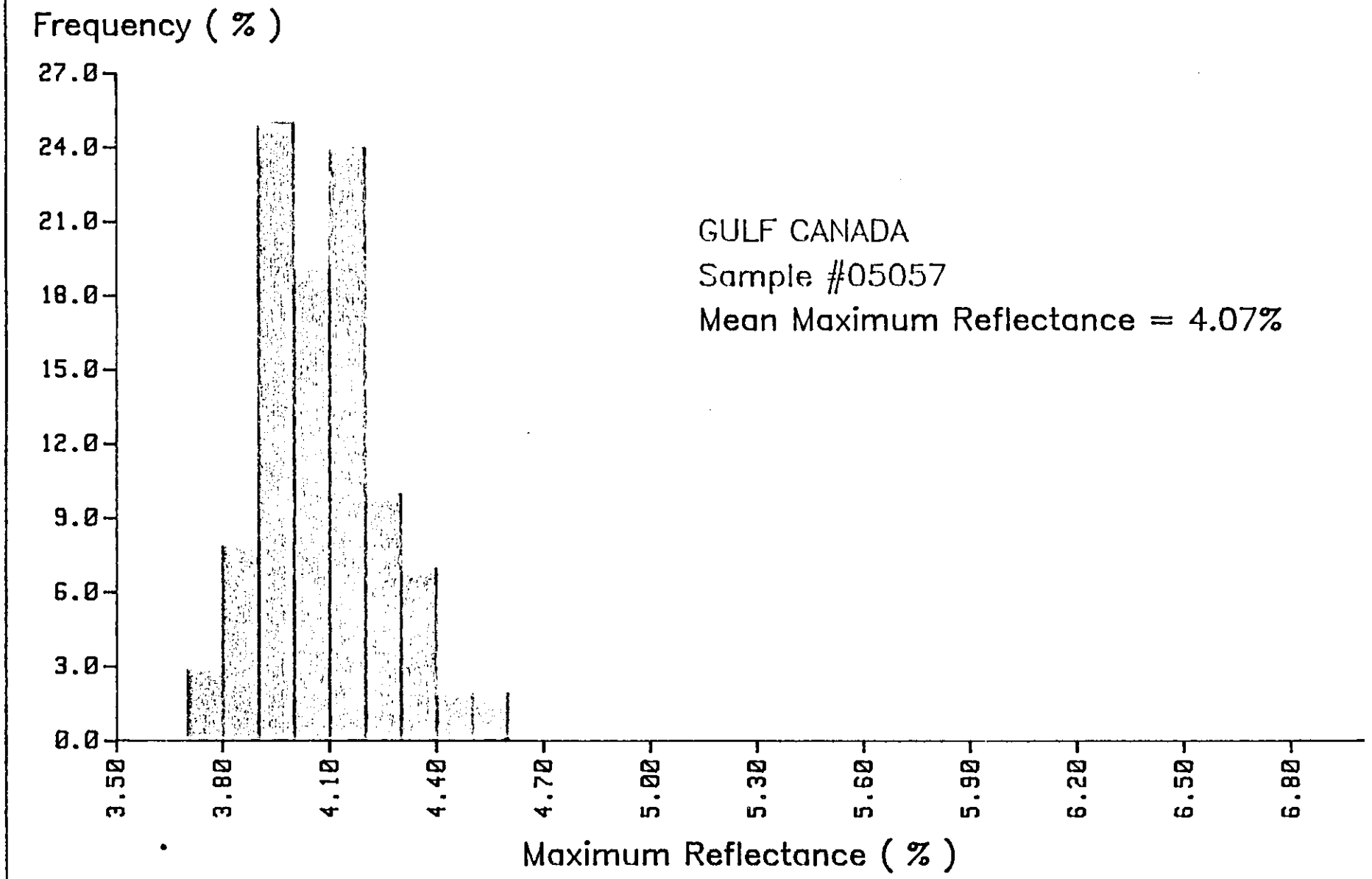
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
3	3.70	3	3.00
4	3.80	8	8.00
5	3.90	25	25.00
6	4.00	19	19.00
7	4.10	24	24.00
8	4.20	10	10.00
9	4.30	7	7.00
10	4.40	2	2.00
11	4.50	2	2.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V37	3.00
V38	8.00
V39	25.00
V40	19.00
V41	24.00
V42	10.00
V43	7.00
V44	2.00
V45	2.00

VITRINITE HISTOGRAM



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Vitrinite Reflectance

GULF CANADA
Sample #05058

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	5.26
Standard Error of the Mean	.02
Coefficient of Variation...%	4.10
Variance	.0465
Standard Deviation	.2156
Skewness	.1632
Kurtosis	2.6364

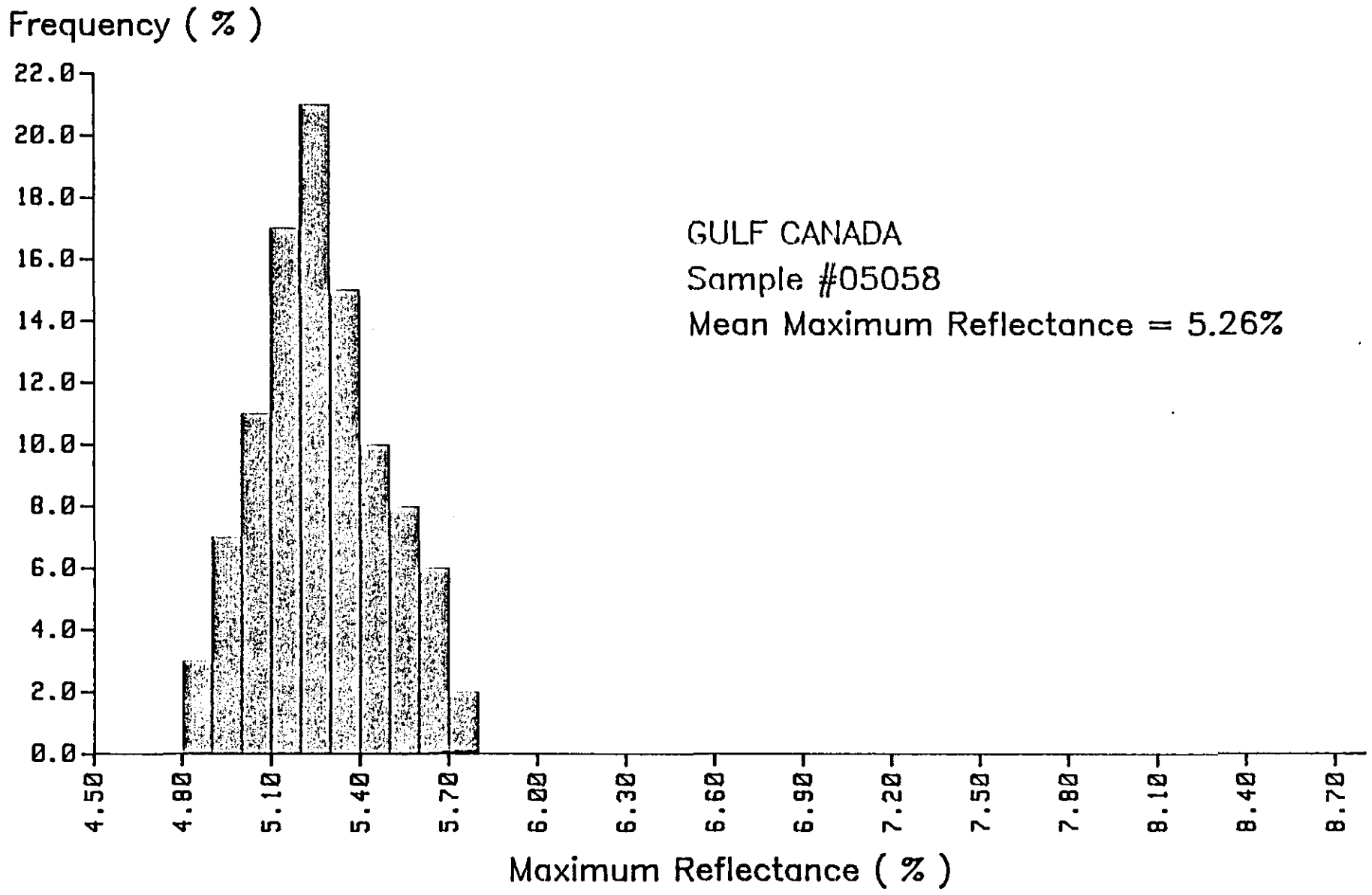
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
4	4.80	3	3.00
5	4.90	7	7.00
6	5.00	11	11.00
7	5.10	17	17.00
8	5.20	21	21.00
9	5.30	15	15.00
10	5.40	10	10.00
11	5.50	8	8.00
12	5.60	6	6.00
13	5.70	2	2.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V48	3.00
V49	7.00
V50	11.00
V51	17.00
V52	21.00
V53	15.00
V54	10.00
V55	8.00
V56	6.00
V57	2.00

VITRINITE HISTOGRAM



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Vitrinite Reflectance

GULF CANADA
Sample #05059

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	4.98
Standard Error of the Mean	.02
Coefficient of Variation...%	4.40
Variance	.0480
Standard Deviation	.2190
Skewness	-.1538
Kurtosis	2.0995

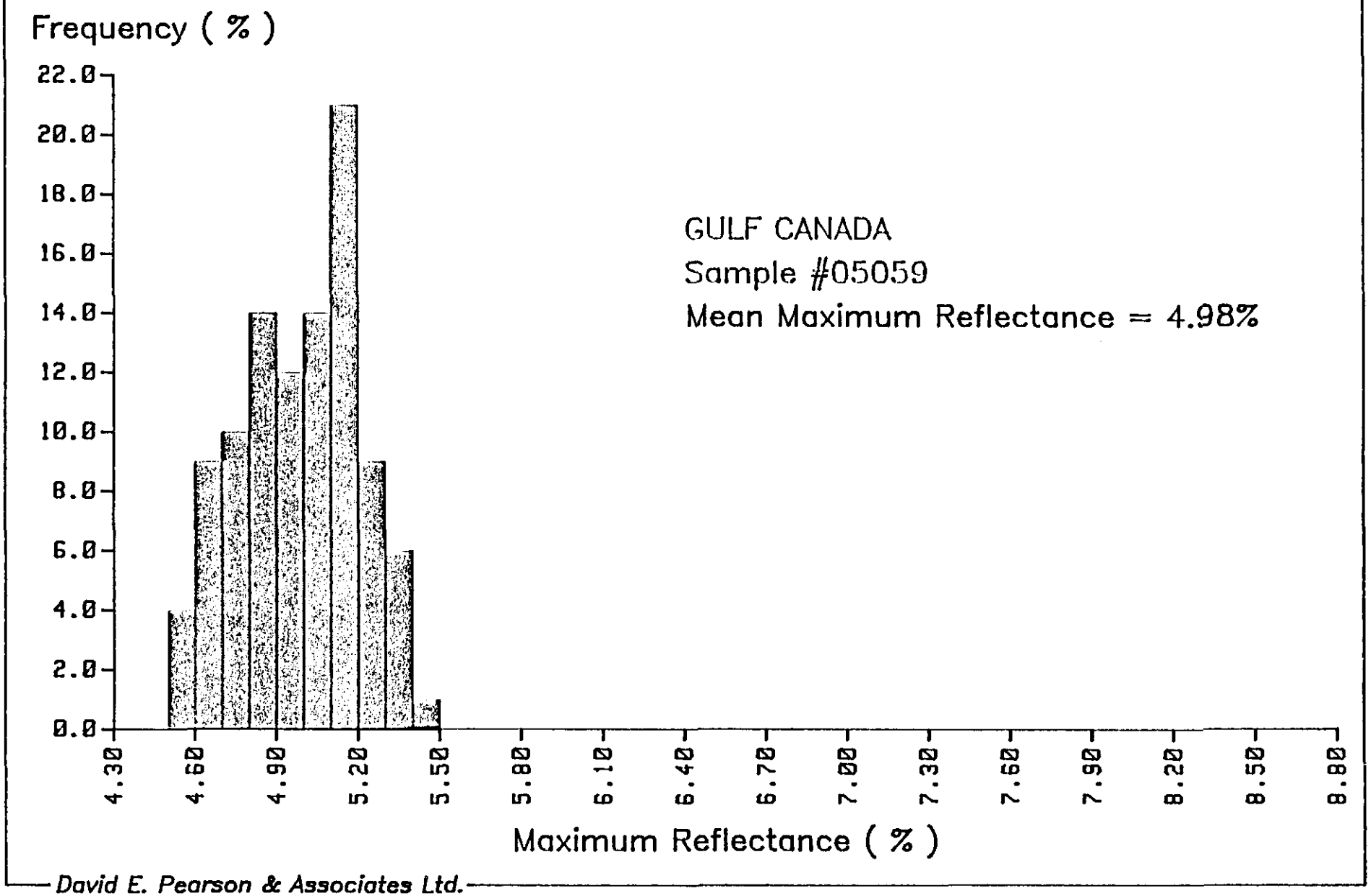
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
3	4.50	4	4.00
4	4.60	9	9.00
5	4.70	10	10.00
6	4.80	14	14.00
7	4.90	12	12.00
8	5.00	14	14.00
9	5.10	21	21.00
10	5.20	9	9.00
11	5.30	6	6.00
12	5.40	1	1.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V45	4.00
V46	9.00
V47	10.00
V48	14.00
V49	12.00
V50	14.00
V51	21.00
V52	9.00
V53	6.00
V54	1.00

VITRINITE HISTOGRAM



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Vitrinite Reflectance

GULF CANADA
Sample #05060

BASIC STATISTICS

Total Number of Observations	9
Observations Selected for Statistics	5
Mean Maximum Reflectance (Romax)...%	6.07
Standard Error of the Mean	.25
Coefficient of Variation...%	9.10
Variance	.3048
Standard Deviation	.5521
Skewness	.3846
Kurtosis	1.2689

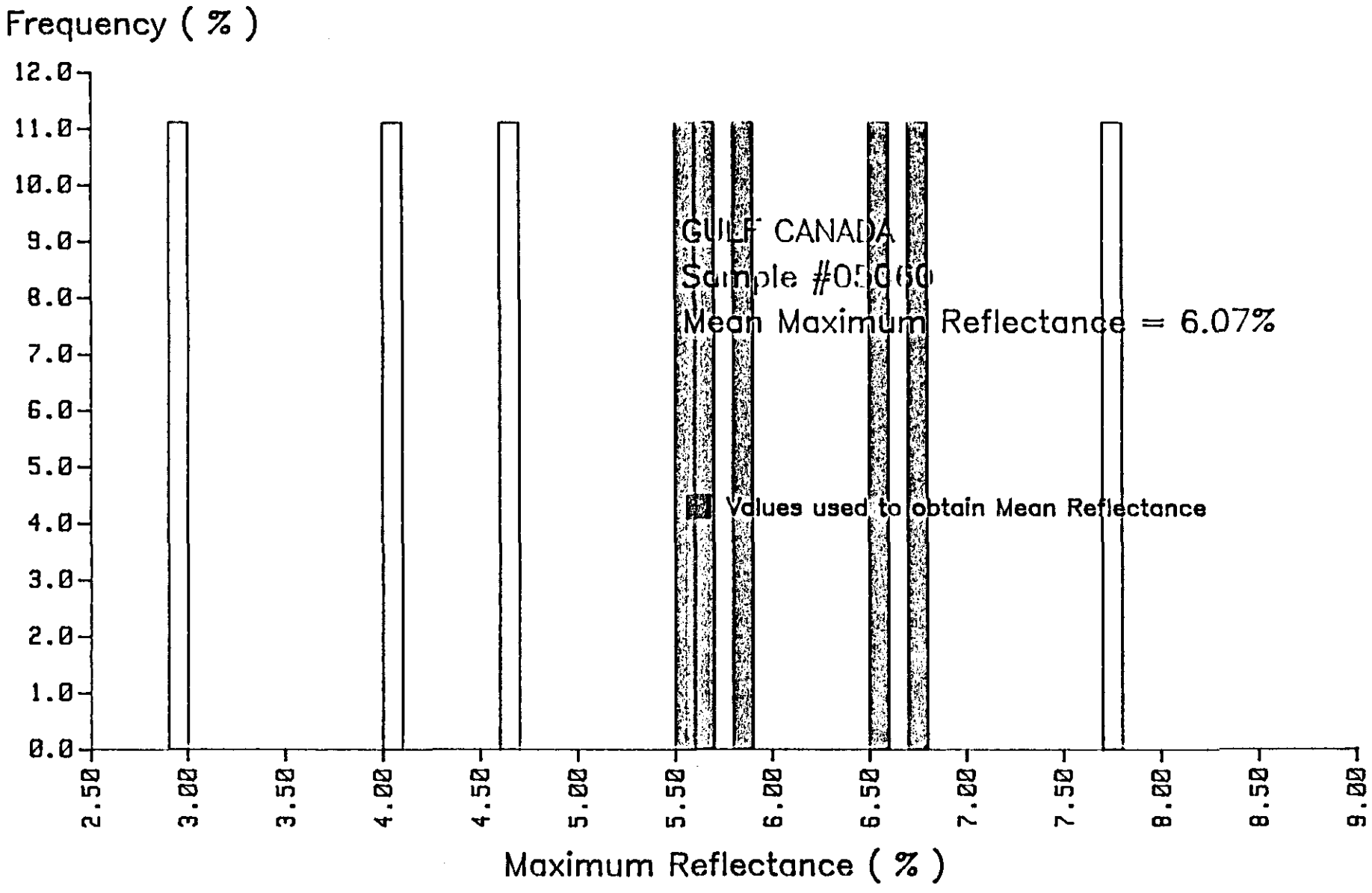
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
6	5.50	1	20.00
7	5.60	1	20.00
9	5.80	1	20.00
16	6.50	1	20.00
18	6.70	1	20.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V55	20.00
V56	20.00
V58	20.00
V60	60.00

VITRINITE HISTOGRAM



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Vitrinite Reflectance

GULF CANADA
Sample #05063

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	6.37
Standard Error of the Mean	.02
Coefficient of Variation...%	3.75
Variance	.0570
Standard Deviation	.2388
Skewness	.0211
Kurtosis	2.2505

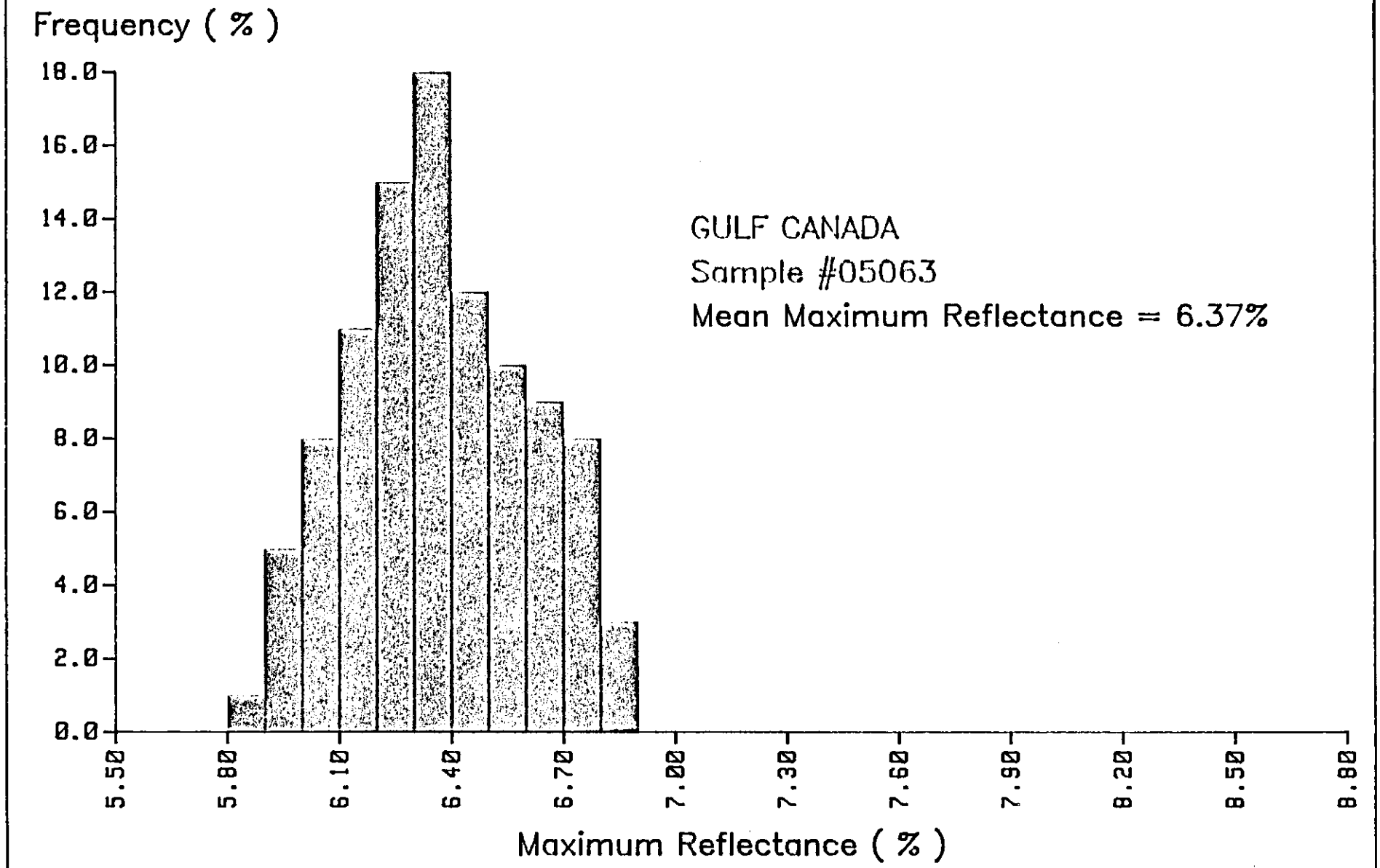
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
4	5.80	1	1.00
5	5.90	5	5.00
6	6.00	8	8.00
7	6.10	11	11.00
8	6.20	15	15.00
9	6.30	18	18.00
10	6.40	12	12.00
11	6.50	10	10.00
12	6.60	9	9.00
13	6.70	8	8.00
14	6.80	3	3.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V58	1.00
V59	5.00
V60	94.00

VITRINITE HISTOGRAM



David E. Pearson & Associates Ltd.

Vitrinite Reflectance

GULF CANADA
Sample #05064

BASIC STATISTICS

Total Number of Observations	100
Mean Maximum Reflectance (Romax)...%	5.28
Standard Error of the Mean	.02
Coefficient of Variation...%	3.66
Variance	.0374
Standard Deviation	.1934
Skewness	-.2471
Kurtosis	2.5643

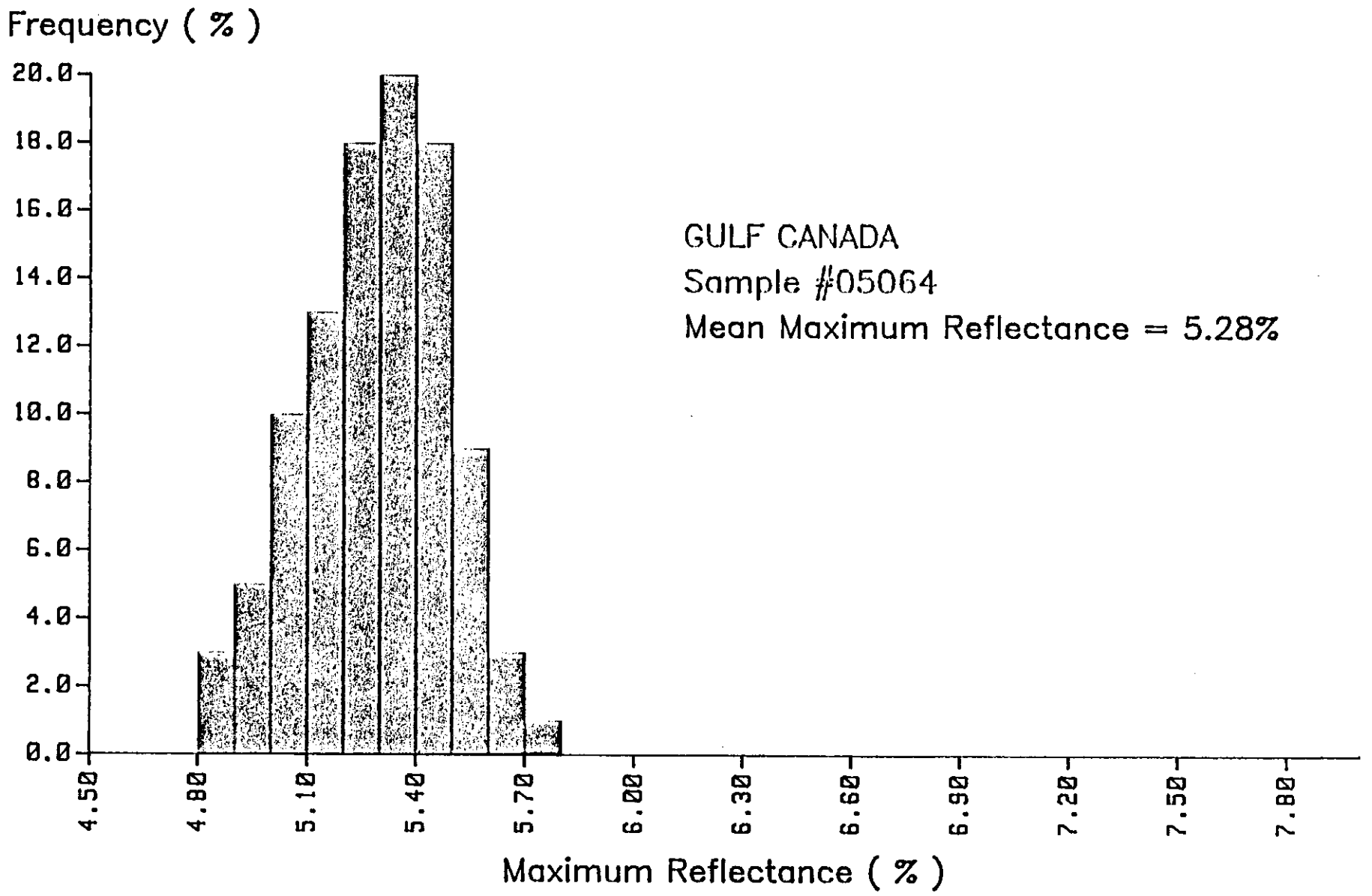
CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
4	4.80	3	3.00
5	4.90	5	5.00
6	5.00	10	10.00
7	5.10	13	13.00
8	5.20	18	18.00
9	5.30	20	20.00
10	5.40	18	18.00
11	5.50	9	9.00
12	5.60	3	3.00
13	5.70	1	1.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V48	3.00
V49	5.00
V50	10.00
V51	13.00
V52	18.00
V53	20.00
V54	18.00
V55	9.00
V56	3.00
V57	1.00

VITRINITE HISTOGRAM



David E. Pearson & Associates Ltd.

00749

APPENDIX I

MAPS AND GEOLOGICAL CROSS-SECTIONS

RHONDDA SEQUENCE

JKr — Sequence of thick massive and laterally extensive chert pebble to cobble conglomerates. With minor gritty sandstones interbedded with an increasing abundance of siltstones and mudstones towards the basal contact

MALLOCH SEQUENCE

JKm — Thick interbeds of mudstone, argillaceous siltstones, fine grained sandstones, and thin beds of orange-tan weathering siltstones. Conglomerate beds tend to be laterally discontinuous. Medium grained hummocky cross stratified beds. Thin coal seams increase in abundance towards the basal gradational contact. Sequence can contain petrified wood and plant fossils. Belemnites and bivalves are sporatically found two-thirds of the way up the sequence.

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PANORAMA SEQUENCE

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LEGEND

- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE, INFERRED)
- ANTICLINE (DEFINED, APPROXIMATE)
- SYNCLINE (DEFINED, APPROXIMATE)
- OVERTURNED ANTICLINE (DEFINED, APPROXIMATE)
- OVERTURNED SYNCLINE (DEFINED, APPROXIMATE)
- BEDDING (INCLINED, OVERTURNED, ESTIMATED)
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- NORMAL FAULT (DEFINED, APPROXIMATE) TEETH INDICATE DOWNTHROWN SIDE
- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- COMPOSITE MEASURED SECTION
- CROSS SECTION LINE
- COAL SEAM

SCALE 1:10,000

Metres 200 100 0 200 400 600 800 1000 Metres

NASS RIVER	MOUNT BEIRNES	NORTH SKEENA	NANNYGOAT CREEK	KLUATANTAN	TZAHNY
MOUNT MULRONEY	BEIRNES CREEK	DEVILS CLAW MOUNTAIN	EVANS CREEK	TABLE MOUNTAIN	OPERATOR MOUNTAIN
ANTHONY CREEK	PANORAMA WEST	PANORAMA EAST	AUGUSTINE CREEK	MOUNT JACKSON	SOUTH SKEENA

128° 45' 128° 00' 57° 00' 56° 45'

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

EVANS CREEK
EVANS CREEK AREA

749

PREPARED BY: S.L.	SCALE 1:10,000	DRAWING No. EVCEC
APPROVED BY:	DATE: DEC., 1988	

L 988
L 987
L 986
L 2194
L 985
Little Creek
Evans Creek
Trail
MT JACKSON
VENTURE RIDGE
BEIRNES SYNCLINORIUM
Peterport
RANGE
JKg
Jp
Km
TRC88003
TRC88415
OTC88005
OTC88001
MJ8315
98
97
96
95
94
93
92
91
90
3000
3500
4000
4500
5000
5500
6000
2500N
2500S
5000E
000N
5000S

RHONDDA SEQUENCE

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GROUNDHOG SEQUENCE (contains main coal bearing unit)

JKg Sequence of mudstone, siltstone and fine to medium grained sandstone beds interbedded with numerous coal seams. Sequence contains plant fossils throughout and bivalves which increase in abundance towards the basal contact.

PANORAMA SEQUENCE

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- COMPOSITE MEASURED SECTION
- CROSS SECTION LINE
- COAL SEAM

SCALE 1:10,000

Metres 200 100 0 200 400 600 800 1000 Metres

128° 45' 128° 00' 57° 00' 56° 45'

NASS RIVER	MOUNT BEIRNES	NORTH SKEENA	NANNYGOAT CREEK	KLUATANTAN	TZAHNY
MOUNT MULRONEY	BEIRNES CREEK	DEVILS CLAW MOUNTAIN	EVANS CREEK	TABLE MOUNTAIN	OPERATOR MOUNTAIN
ANTHONY CREEK	PANORAMA WEST	PANORAMA EAST	AUGUSTINE CREEK	MOUNT JACKSON	SOUTH SKEENA

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

EVANS CREEK
MOUNT JACKSON AREA

749

PREPARED BY: S.L.	SCALE 1:10,000	DRAWING No. EVCMJ
APPROVED BY:	DATE: DEC., 1988	

Tp. 24

Tp. 23

MT. GORDON

PYRAMID BLUFF

OPERATOR MTN.

Fork Creek

Grizzly Creek

Taylor Creek

Duti River

5635

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Metres 200 100 0 200 400 600 800 1000 Metres

128° 45' — 128° 00' — 57° 00' — 56° 45'

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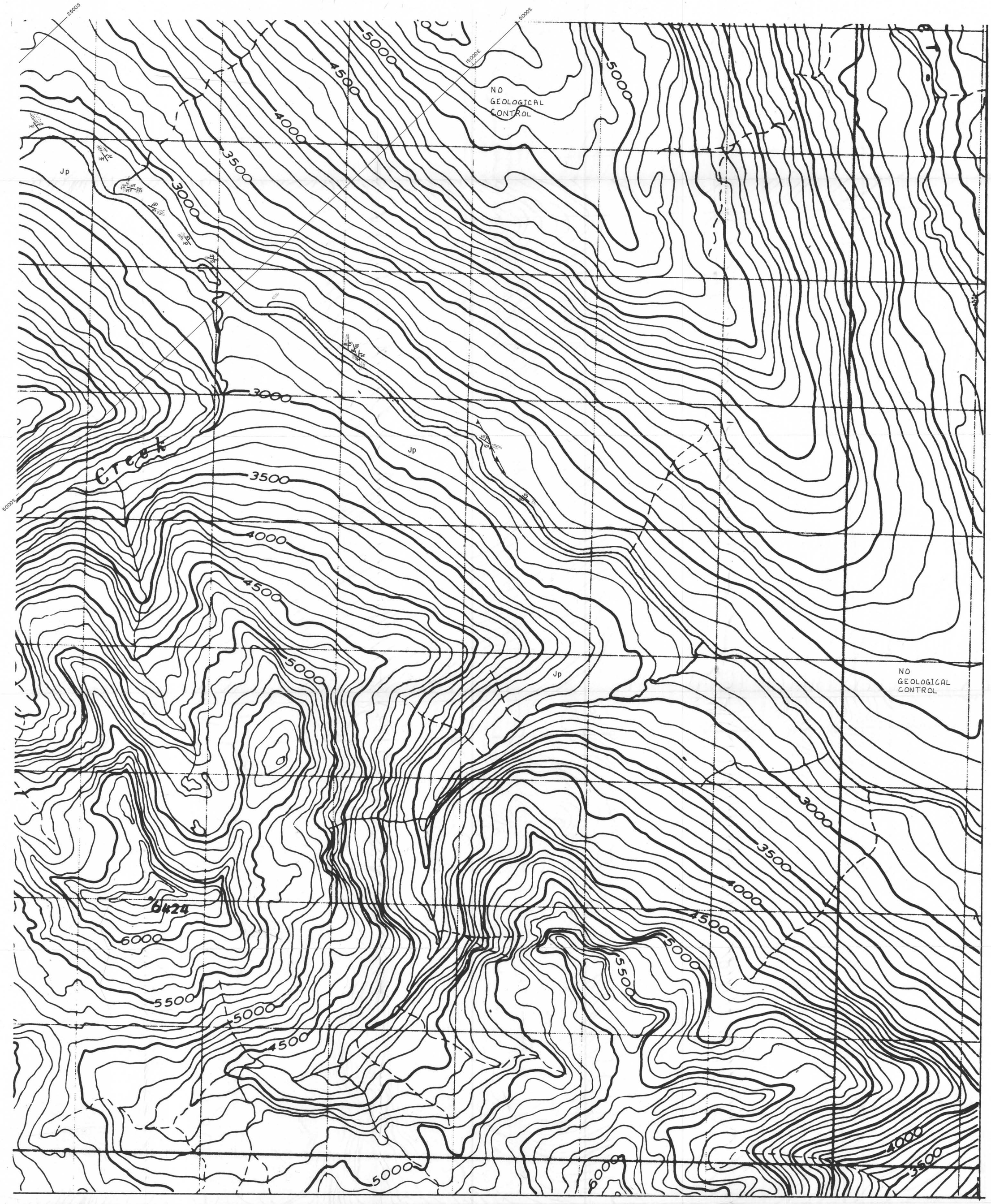
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

EVANS CREEK
OPERATOR MOUNTAIN AREA

749

PREPARED BY: S.L.	SCALE 1:10,000	DRAWING No. EVCOM
APPROVED BY:	DATE: DEC., 1988	



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- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- COMPOSITE MEASURED SECTION
- 3000 N — CROSS SECTION LINE
- COAL SEAM

SCALE 1:10,000

Metres 200 100 0 200 400 600 800 1000 Metres

128° 45' — 128° 00' — 57° 00' — 56° 45'

NASS RIVER	MOUNT BEIRNES	NORTH SKEENA	NANNYGOAT CREEK	KLUATANTAN	TZAHNY
MOUNT MULRONEY	BEIRNES CREEK	DEVILS CLAW MOUNTAIN	EVANS CREEK	TABLE MOUNTAIN	OPERATOR MOUNTAIN
ANTHONY CREEK	PANORAMA WEST	PANORAMA EAST	AUGUSTINE CREEK	MOUNT JACKSON	SOUTH SKEENA

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

EVANS CREEK
SOUTH SKEENA AREA

749

PREPARED BY: S.L. | SCALE 1:10,000 | DRAWING No. EVCSS
APPROVED BY: | DATE: DEC., 1988

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Metres 200 100 0 200 400 600 800 1000 Metres

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GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

EVANS CREEK
TABLE MOUNTAIN AREA

749

PREPARED BY: S.L.	SCALE 1:10,000	DRAWING No. EVCTM
APPROVED BY:	DATE: DEC., 1988	

RHONDDA SEQUENCE

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- FAULT (DEFINED, APPROXIMATE) SHOWING RELATIVE MOVEMENT
- COMPOSITE MEASURED SECTION
- CROSS SECTION LINE
- COAL MAP

SCALE 1:10,000

Metres 200 100 0 200 400 600 800 1000 Metres

128° 45' — 128° 00' — 57° 00' — 56° 45'

NASS RIVER	MOUNT BEIRNES	NORTH SKEENA	NANNYGOAT CREEK	KLUATANTAN	TZAHNY
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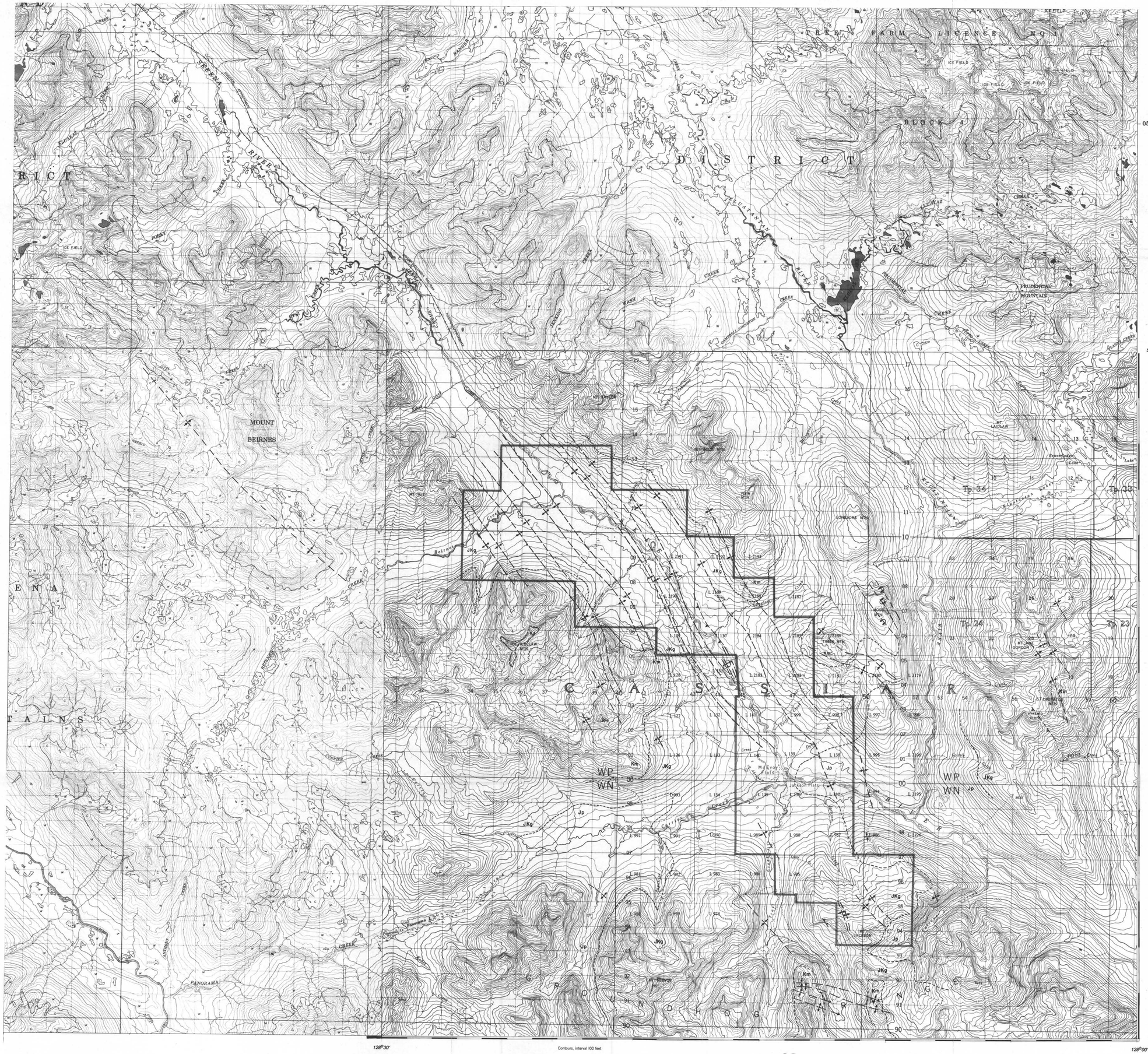
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

EVANS CREEK
AUGUSTINE CREEK AREA

749

PREPARED BY: S.L.	SCALE 1:10,000	DRAWING No. EVCAC
APPROVED BY:	DATE: DEC., 1988	



LEGEND

ROADS AND RELATED FEATURES

- HARD SURFACE, ALL WEATHER
- LOOSE SURFACE
- CART TRACK, WINTER ROAD, UNDER CONSTRUCTION
- TRAIL, CUTLINE, PORTAGE
- BUILT UP AREA
- RAILWAY, SIDING, STATION, STOP
- BRIDGE
- SEAPLANE BASE, ANCHORAGE

LANDMARK FEATURES

- HOUSE, BARN
- CHURCH, SCHOOL
- POST OFFICE
- HISTORICAL SITE
- TOWERS: FIRE, RADIO
- WELL: OIL, GAS
- TANK: OIL, GASOLINE, WATER
- TELEPHONE LINE
- POWER TRANSMISSION LINE
- MINE
- CUTTING, EMBANKMENT
- GRAVEL PIT — GP

BOUNDARIES AND CONTROL

- INTERNATIONAL, PROVINCIAL, BOUNDARY MONUMENT
- COUNTY, DISTRICT
- TOWNSHIP, PARISH — SURVEYED / UNSURVEYED
- TOWNSHIP, DLS — SURVEYED / UNSURVEYED / SECTION CORNERS
- MUNICIPALITY
- INDIAN RESERVE, PARK, ETC.
- HORIZONTAL CONTROL POINT
- BENCH MARK — BM 965
- SPOT ELEVATION, ELEVATION APPROXIMATE — 390 / ~721

DRAINAGE AND RELATED FEATURES

- STREAM, SHORELINE: INDEFINITE
- DIRECTION OF FLOW
- LAKE: INTERMITTENT
- INUNDATED, FLOODED LAND
- MARSH OR SWAMP (WOODED)
- DRY RIVER BED WITH CHANNELS
- SAND, ABOVE, IN WATER
- STRING BOG — SB
- TUNDRA PONDS, POLYGONS — TP / PP
- RAPIDS
- FORESHORE FLATS — FF
- ROCK
- DAM
- WHARF
- DITCH

RELIEF FEATURES

- CONTOURS — 500 / 100
- APPROXIMATE CONTOUR — 125 / 100 / 25
- DEPRESSION
- ESKER
- PINGO — 125
- SAND, SAND DUNES — SAND
- PALSA BOG — PB
- WOODED AREA — W / C

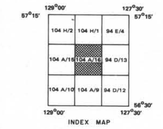
GEOLOGICAL FEATURES

- GEOLOGICAL CONTACT
- STUCTURE (FOLD AXES, FAULTS)

SCALE 1:50,000

0 1 2 3 MILES

0 1000 2000 3000 4000 5000 METERS

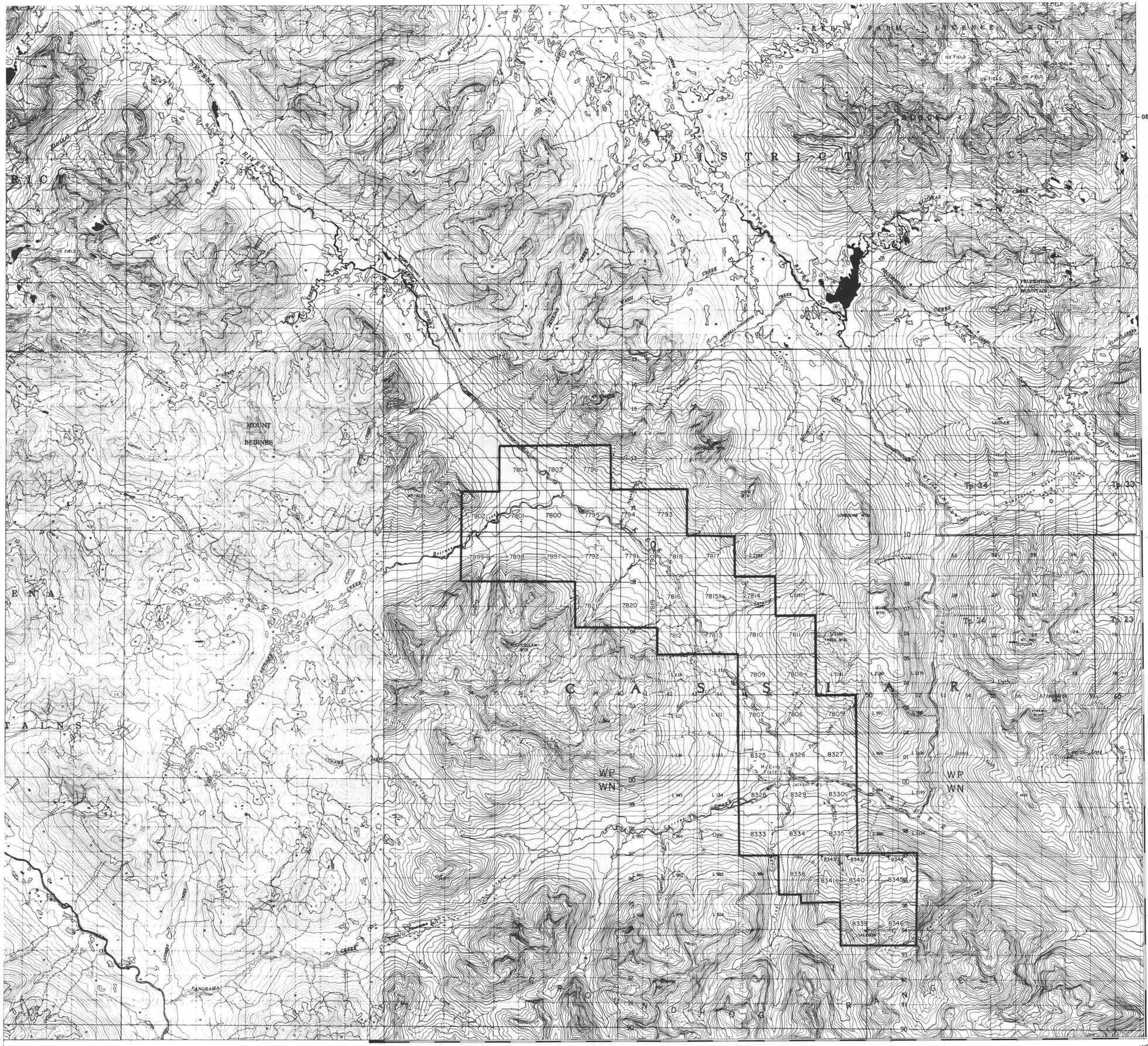


749

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

EVANS CREEK COAL PROJECT
1988
REGIONAL GEOLOGY MAP

PREPARED BY: S.L.
APPROVED BY: E.S.
DATE: FEB., 1989
DRAWING No. EVC88001



LEGEND

ROADS AND RELATED FEATURES

- HARD SURFACE, ALL WEATHER
- LOOSE SURFACE
- CART TRACK, WINTER ROAD, UNDER CONSTRUCTION
- TRAIL, OUTLINE, PORTAGE
- BUILT UP AREA
- RAILWAY, SIDING, STATION, STOP
- BRIDGE
- SEAPLANE BASE, ANCHORAGE

LANDMARK FEATURES

- HOUSE, BARN
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- POST OFFICE
- HISTORICAL SITE
- TOWERS, FIRE, RADIO
- WELL, OIL, GAS
- TANK, OIL, GASOLINE, WATER
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- POWER TRANSMISSION LINE
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BOUNDARIES AND CONTROL

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- TOWNSHIP, DLS — SURVEYED, UNSURVEYED, SECTION CORNERS
- MUNICIPALITY
- INDIAN RESERVE, PARK, ETC.
- HORIZONTAL CONTROL POINT
- BENCH MARK — BM 965
- SPOT ELEVATION, ELEVATION APPROXIMATE — 350 -721

DRAINAGE AND RELATED FEATURES

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- STRING BOG — SB
- TUNDRA PONDS, POLYGONS — TP, PG
- RAPIDS
- FORESHORE FLATS — FF
- ROCK
- DAM
- WHARF
- DITCH

RELIEF FEATURES

- CONTOURS — 500, 250
- APPROXIMATE CONTOUR — 125, 100, 75
- DEPRESSION
- ESKER
- PINGO — P
- SAND, SAND DUNES — SAND
- PALSA BOG — PB
- WOODED AREA — W, C
- COAL LICENCE
- COAL LICENCE NUMBER — 7805

T. N. — M.N. — 28°24'30"

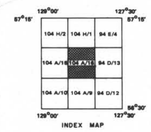
CORRECTED TO 1980

ANNUAL CHANGE DECREASING 3.8'

SCALE 1:50,000

0 — 2 — 3 MILES

0 — 1000 — 2000 — 3000 — 4000 — 5000 METERS



INDEX MAP

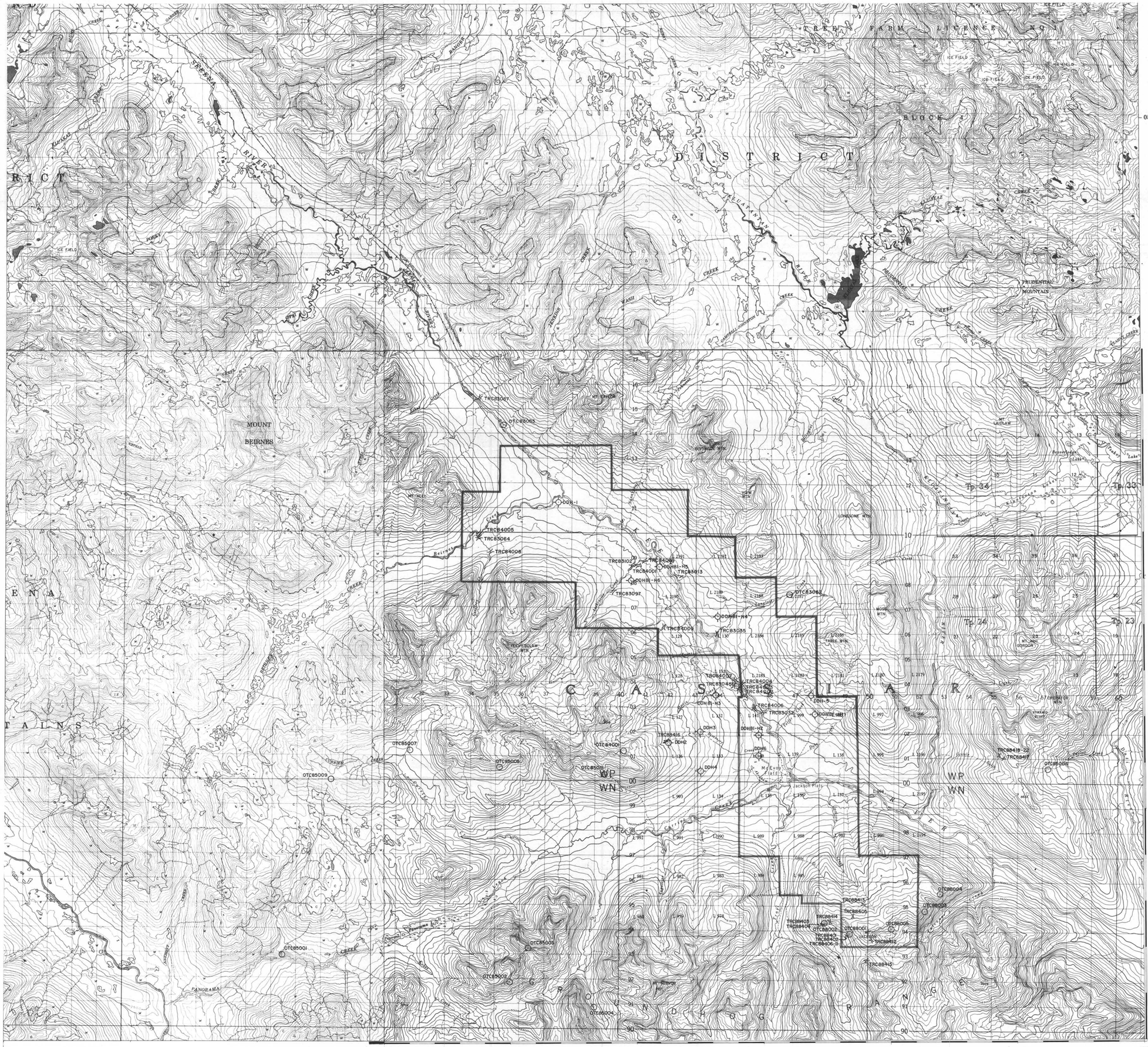
749

GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA

EVANS CREEK

1988 LICENCE MAP

PREPARED BY: A.P.
APPROVED BY:
DATE: NOV. 1988
DRAWING No. EVC88002



Contours, interval 100 feet

LEGEND

ROADS AND RELATED FEATURES

- HARD SURFACE, ALL WEATHER
- LOOSE SURFACE
- CART TRACK, WINTER ROAD, UNDER CONSTRUCTION
- TRAIL, CUTLINE, PORTAGE
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- INTERNATIONAL, PROVINCIAL, BOUNDARY MONUMENT
- COUNTY, DISTRICT
- TOWNSHIP, PARISH — SURVEYED, UNSURVEYED — SURVEYED
- TOWNSHIP, DLS — SURVEYED, UNSURVEYED, SECTION CORNERS
- MUNICIPALITY
- INDIAN RESERVE, PARK, ETC.
- HORIZONTAL CONTROL POINT
- BENCH MARK — BM 965
- SPOT ELEVATION, ELEVATION APPROXIMATE — 390 -721

DRAINAGE AND RELATED FEATURES

- STREAM, SHORELINE, INDEFINITE
- DIRECTION OF FLOW
- LAKE, INTERMITTENT
- INUNDATED, FLOODED LAND
- MARSH OR SWAMP (WOODED)
- DRY RIVER BED WITH CHANNELS
- SAND, ABOVE, IN WATER
- STRING BOG — SB
- TUNDRA PONDS, POLYGONS — TP, PG
- RAPIDS
- FORESHORE FLATS — FF
- ROCK
- DAM
- WHARF
- DITCH

RELIEF FEATURES

- CONTOURS — 500, 250
- APPROXIMATE CONTOUR — 100, 125
- DEPRESSION — 75
- ESKER
- PINGO — 125
- SAND, SAND DUNES — SAND
- PALSA BOG — PB
- WOODED AREA — W, C
- TRENCH LOCATION
- DIAMOND DRILL HOLE LOCATION
- MEASURED SECTION LOCATION

SCALE 1:50000

0 1 2 3 MILES

0 1000 2000 3000 4000 5000 METERS

INDEX MAP

749

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

EVANS CREEK COAL PROJECT

TRENCH, DRILL HOLE AND MEASURED SECTION LOCATION MAP

PREPARED BY: S.L.	DRAWING No. EVC88003
APPROVED BY: E. S. DATE: FEB., 1989	

05'

57°00'

56°45'

128°30'

128°00'

Contours, interval 100 feet

△ FLORA MACROFOSSILS
○ FAUNA MACROFOSSILS
□ TRACE FOSSILS

LEGEND

ROADS AND RELATED FEATURES

HARD SURFACE, ALL WEATHER
LOOSE SURFACE
CART TRACK, WINTER ROAD, UNDER CONSTRUCTION
TRAIL, OUTLINE, PORTAGE
BUILT UP AREA
RAILWAY, SIDING, STATION, STOP
BRIDGE
SEAPLANE BASE, ANCHORAGE

LANDMARK FEATURES

HOUSE, BARN
CHURCH, SCHOOL
POST OFFICE
HISTORICAL SITE
TOWERS: FIRE, RADIO
WELL: OIL, GAS
TANK: OIL, GASOLINE, WATER
TELEPHONE LINE
POWER TRANSMISSION LINE
MINE
CUTTING, EMBANKMENT
GRAVEL PIT

BOUNDARIES AND CONTROL

INTERNATIONAL, PROVINCIAL; BOUNDARY MONUMENT
COUNTY, DISTRICT
TOWNSHIP, PARISH — SURVEYED; — UNSURVEYED
TOWNSHIP, DLS — SURVEYED; — UNSURVEYED; — SECTION CORNERS
MUNICIPALITY
INDIAN RESERVE, PARK, ETC.
HORIZONTAL CONTROL POINT
BENCH MARK — BM 965
SPOT ELEVATION, ELEVATION APPROXIMATE — 390 -721±

DRAINAGE AND RELATED FEATURES

STREAM, SHORELINE: INDEFINITE
DIRECTION OF FLOW
LAKE: INTERMITTENT
INUNDATED, FLOODED LAND
MARSH OR SWAMP (WOODED)
DRY RIVER BED WITH CHANNELS
SAND, ABOVE, IN WATER
STRING BOG — SB
TUNDRA PONDS, POLYGONS — TP, PG
RAPIDS
FORESHORE FLATS — FF
ROCK
DAM
WHARF
DITCH

RELIEF FEATURES

CONTOURS — 500, 250
APPROXIMATE CONTOUR — 125, 25
DEPRESSION
ESKER
PINGO — 125
SAND, SAND DUNES — SAND
PALSA BOG — PB
WOODED AREA — W, C
COAL LICENSE

T. N. — M.N. — 26°24'30"

CORRECTED TO 1980

ANNUAL CHANGE DECREASING 3.5'

SCALE 1:50,000

0 — 2 — 3 MILES
0 — 1000 — 2000 — 3000 — 4000 — 5000 METERS

INDEX MAP

128°00' — 127°30' — 57°15' — 56°30'

104 H/3 | 104 H/1 | 84 E/4
104 A/16 | 104 A/8 | 84 D/13
104 A/10 | 104 A/9 | 84 D/12

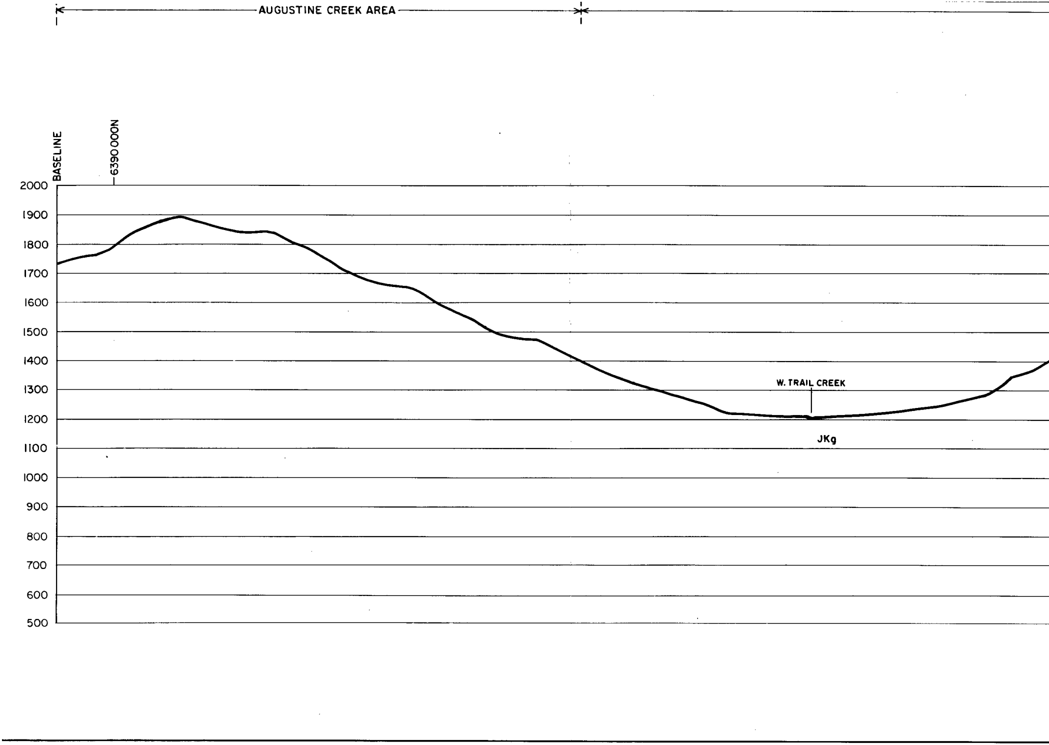
749

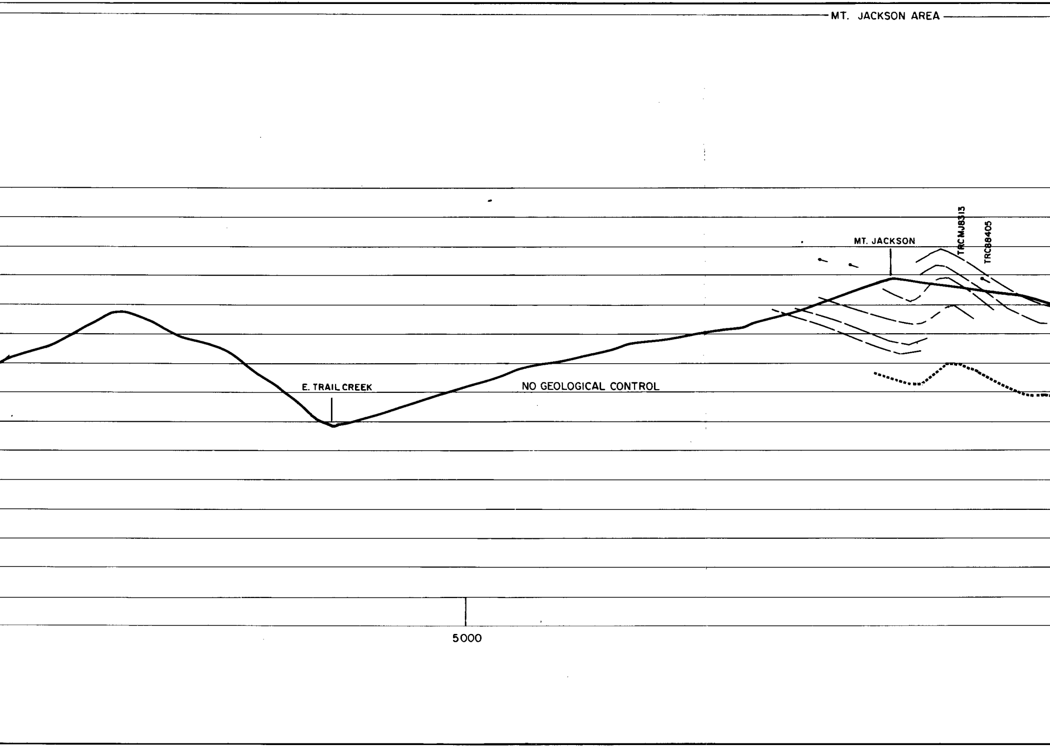
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

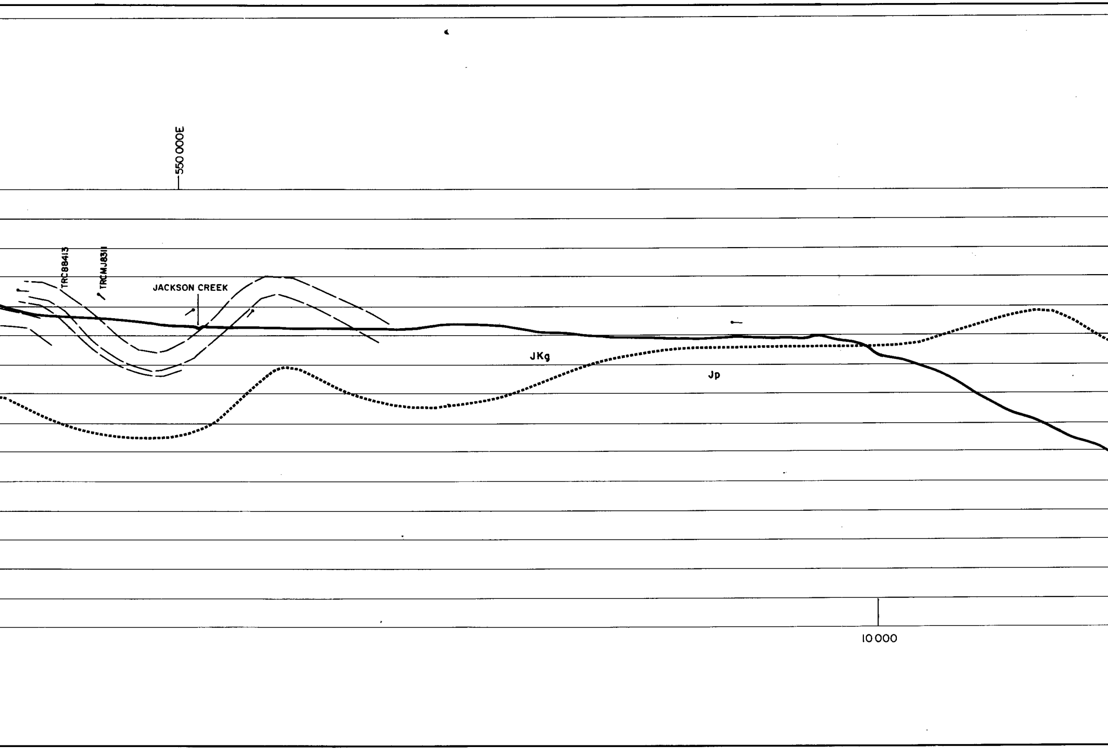
EVANS CREEK

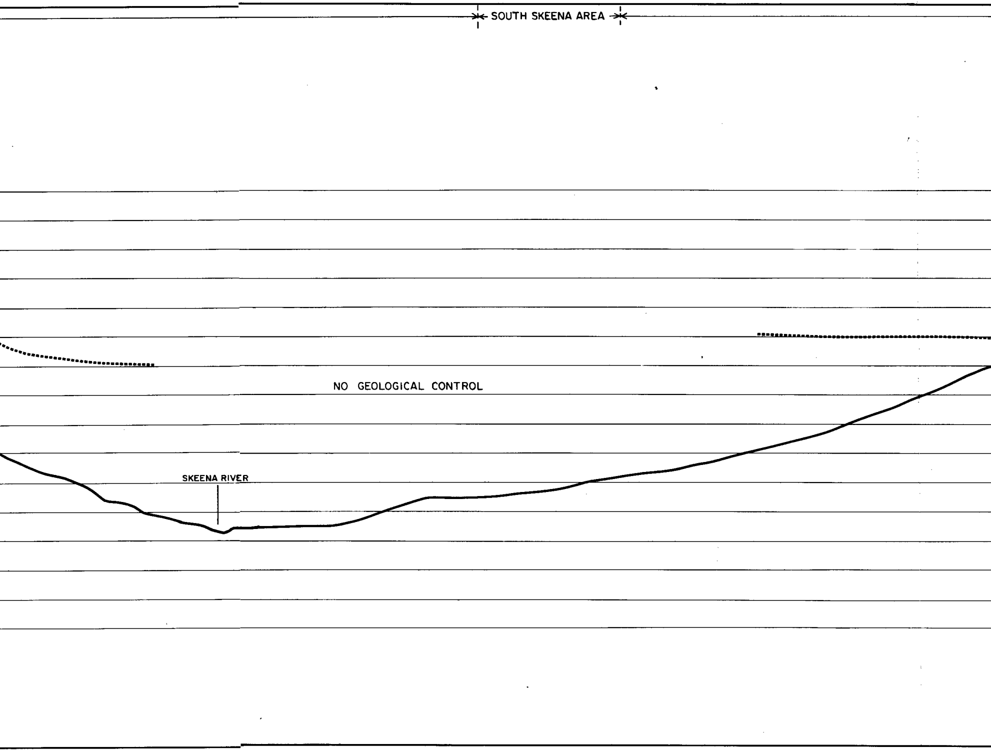
FOSSIL LOCATION MAP

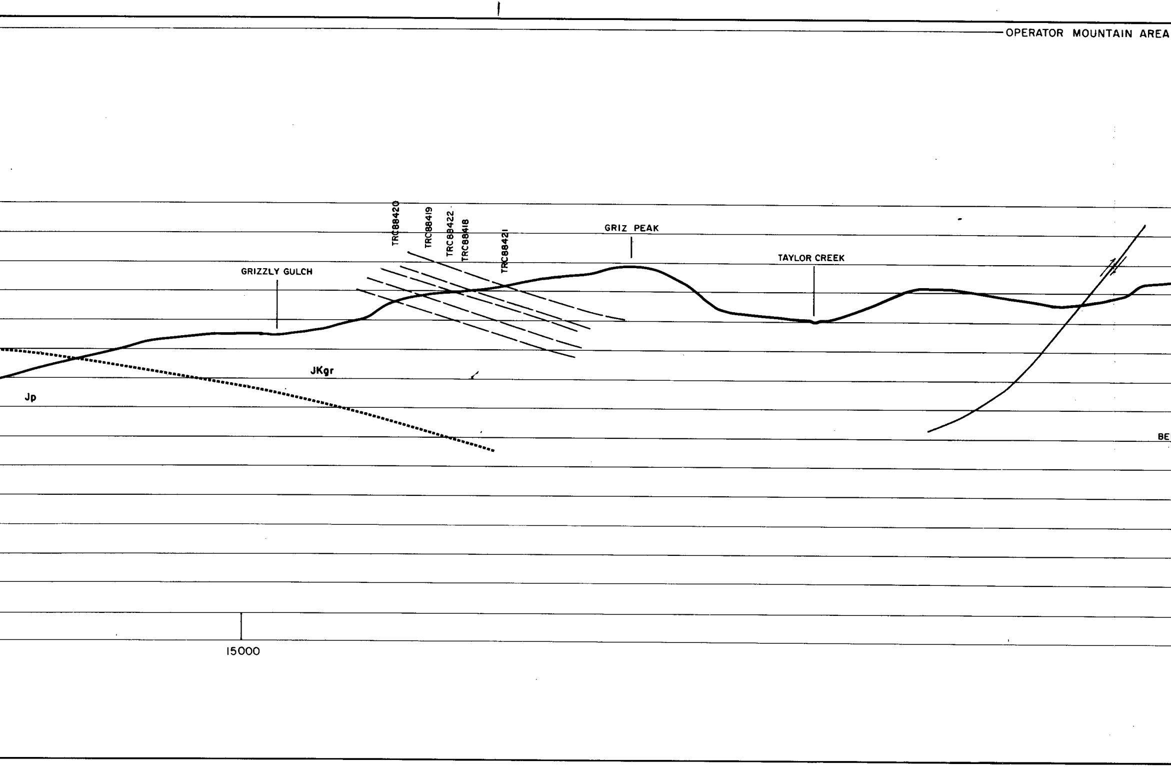
PREPARED BY: S.L.
APPROVED BY:
DATE NOV. 1988
DRAWING No. EVC 88004

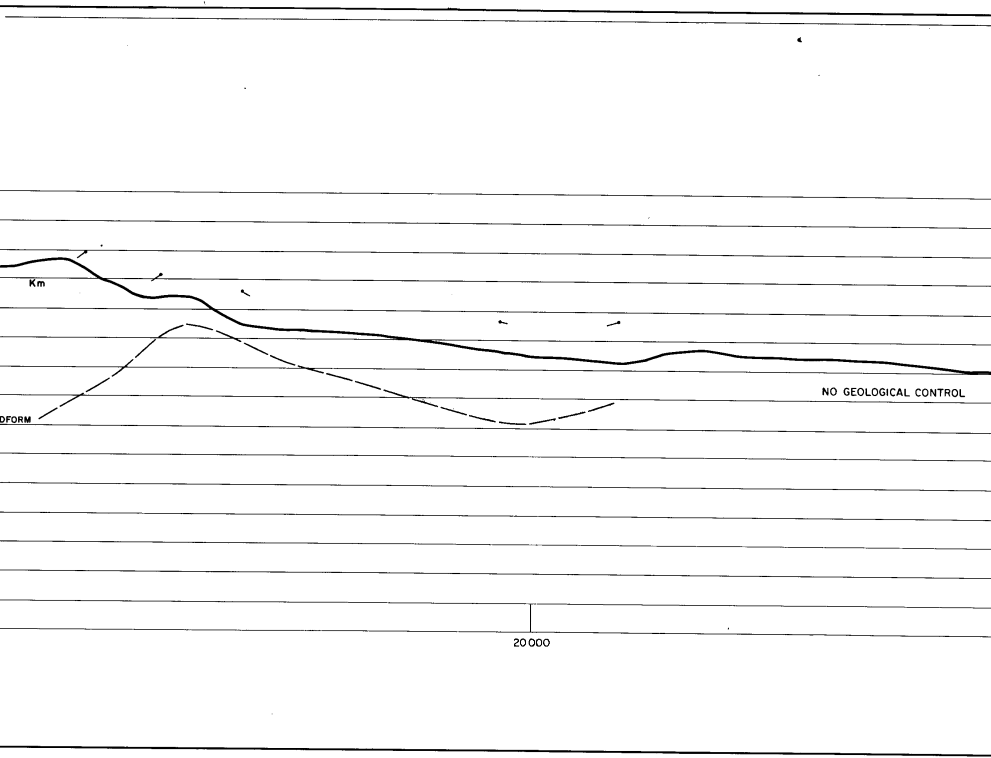


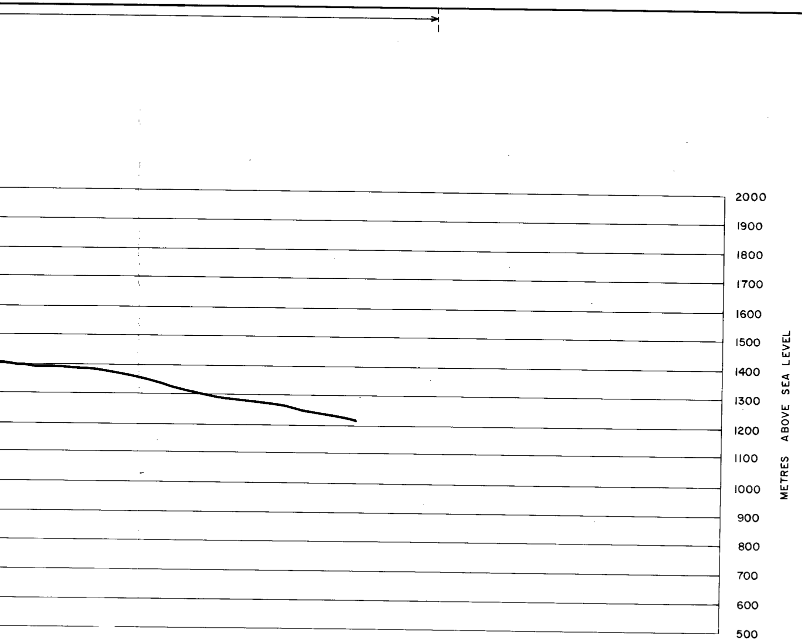

MT. JACKSON AREA
MT. JACKSON
TRCMJ8313
TRC88405
E. TRAIL CREEK
NO GEOLOGICAL CONTROL
5000


550 000E
TRC88413
TRCMJ8311
JACKSON CREEK
JKg
Jp
10 000


SOUTH SKEENA AREA
NO GEOLOGICAL CONTROL
SKEENA RIVER


OPERATOR MOUNTAIN AREA
TRC88420
TRC88419
TRC88422
TRC88418
TRC88421
GRIZ PEAK
TAYLOR CREEK
GRIZZLY GULCH
JKgr
Jp
BE
15000


Km
DFORM
NO GEOLOGICAL CONTROL
20000


2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
METRES ABOVE SEA LEVEL

Legend

··························	GEOLOGICAL CONTACT (INFERRED)
——— – – –	COAL SEAM TRACE (DEFINED, APPROX.)/ BEDFORM
——— ⇄ ········	FAULT TRACE (DEFINED, APPROX., INFERRED)
oooooooooo ooo ooo ooo o o o o	CONGLOMERATIC UNIT (DEFINED, APPROX., INFERRED)
—	ATTITUDE CONTROL POINT
DDH 82001	DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

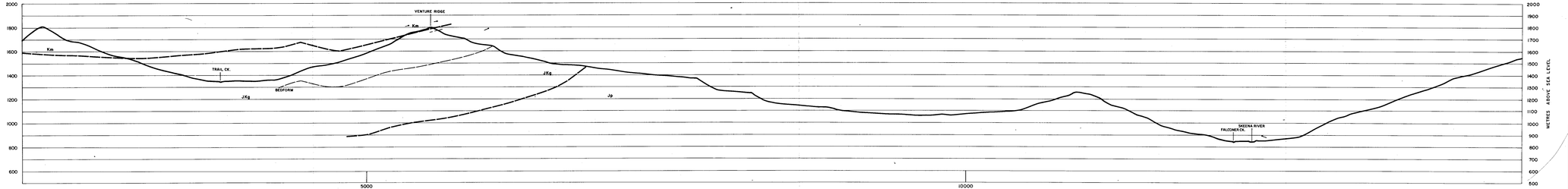
Northwestern British Columbia

EVANS CREEK
GEOLOGICAL CROSS SECTION
2500 S

749

PREPARED BY: S.L.	SCALE 1: 10,000
APPROVED BY: DATE: DEC., 1988	DRAWING No. EVC2500S

MT. JACKSON AREA — SOUTH SKEENA AREA



Legend

- GEOLOGICAL CONTACT (INFERRED)
- COAL SEAM TRACE (DEFINED, APPROX.) / BEDFORM
- FAULT TRACE (DEFINED, APPROX., INFERRED)
- CONGLOMERATIC UNIT (DEFINED, APPROX., INFERRED)
- ATTITUDE CONTROL POINT
- DDH 82001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Northwestern British Columbia

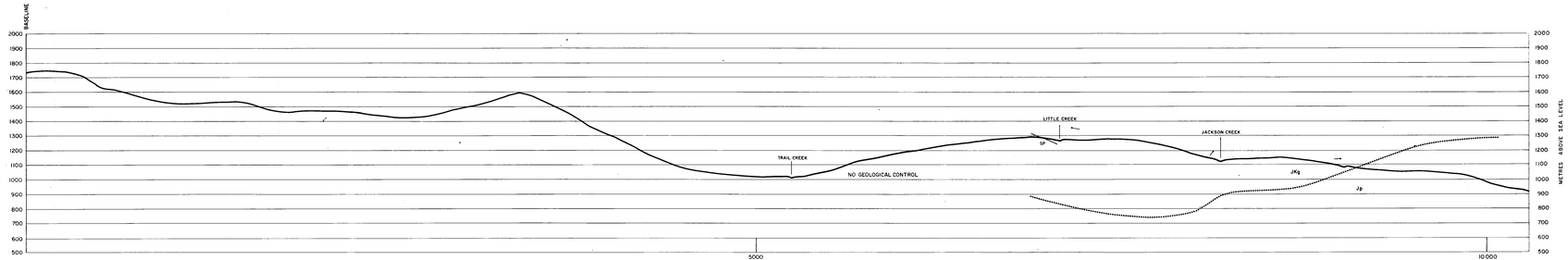
EVANS CREEK
GEOLOGICAL CROSS SECTION
5000 S

749

PREPARED BY: S.L. | SCALE 1 : 10,000
APPROVED BY: | DATE: DEC., 1988 | DRAWING No. EVC 5000 S

AUGUSTINE CREEK AREA

MT. JACKSON AREA



Legend

- GEOLOGICAL CONTACT (INFERRED)
- COAL SEAM TRACE (DEFINED, APPROX.) BEDFORM
- FAULT TRACE (DEFINED, APPROX., INFERRED)
- CONGLOMERATIC UNIT (DEFINED, APPROX., INFERRED)
- ATTITUDE CONTROL POINT
- DDH 82001 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

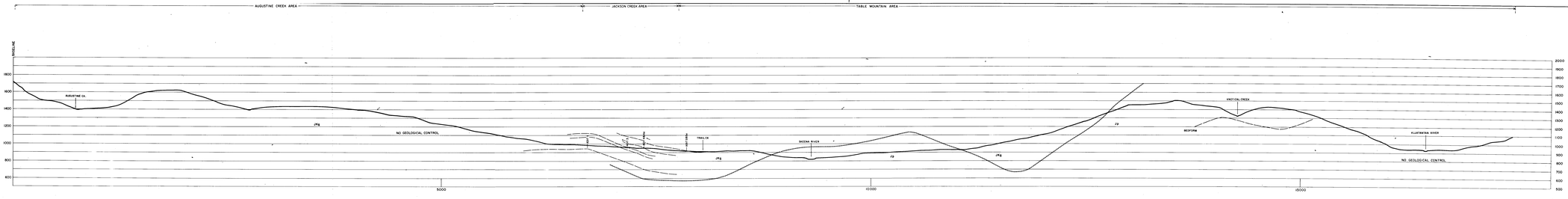
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Northwestern British Columbia

EVANS CREEK
GEOLOGICAL CROSS SECTION
000 N

749

PREPARED BY: S.L.	SCALE 1: 10,000
APPROVED BY:	DATE: DEC., 1988 — DRAWING No. EVC000N



Legend

- GEOLOGICAL CONTACT (INFERRED)
- COAL SEAM TRACE (DEFINED, APPROX.) (INFERRED)
- FAULT TRACE (DEFINED, APPROX., INFERRED)
- CONGLOMERATIC UNIT (DEFINED, APPROX., INFERRED)
- ATTITUDE CONTROL POINT
- DDH 82320-2
- DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

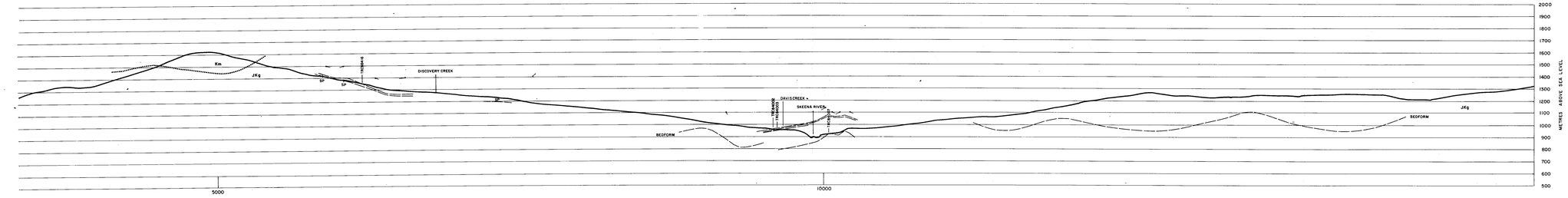
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Northwestern British Columbia

EVANS CREEK
GEOLOGICAL CROSS SECTION
2500 N

749

PREPARED BY: S.L. SCALE 1:10,000
APPROVED BY: DATE DEC., 1988 DRAWING No. EVC-2500-N



Legend

- GEOLOGICAL CONTACT (INFERRED)
- COAL SEAM TRACE (DEFINED, APPROX.)/ BEDFORM
- FAULT TRACE (DEFINED, APPROX., INFERRED)
- CONGLOMERATIC UNIT (DEFINED, APPROX., INFERRED)
- ATTITUDE CONTROL POINT
- DDH 82-00 — DIAMOND DRILL HOLE WITH ATTITUDE CONTROL

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Northwestern British Columbia

EVANS CREEK
GEOLOGICAL CROSS SECTION
7500 N

749

PREPARED BY: S.L. SCALE 1:10,000
APPROVED BY: DATE: DEC., 1988 DRAWING No. EVC 7500N