CONFIDENTIAL

GOODRICH COAL PROPERTY

Peace River Coalfield

Northeastern British Columbia

RESOURCE AREA

MINING AND ECONOMIC ASSESSMENTS

Prepared by:

Gulf Canada Resources Inc.
Coal Division (owner/operator)
and
Norwest Resource Consultants Ltd.

February, 1983

00534

MAP AND LICENCE NUMBERS

Map Numbers.

93-0-8
93-0-9
93-0-10
93-0-16
93-P-5

Licence Numbers:

4750
4751
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Approximate Centre of Goodrich Coal Property:

Latitude: N55° 15" Longitude: W122° 25'

TABLE OF CONTENTS

		PAGE
1.	**SUMMARY**	1
2.	**INTRODUCTION**	4
3.	**PROPERTY DESCRIPTION**	6
	3.1 LOCATION	6
	3.2 CHARACTERISTICS OF THE PROPERTY	6
	3.3 PHYSIOGRAPHY	7
	3.4 CLIMATE	7
	3.5 REGIONAL INFRASTRUCTURE	8
	3.5.1 Roads	8
	3.5.2 Railroads	8
	3.5.3 Electrical Power	9
	3.5.4 Townsite	9
	3.5.5 Port Facilities	10
4.	**MOBERLY PROSPECT**	11
	4.1 PROPERTY DESCRIPTION	11
	4.2 GEOLOGY	11
	4.3 COAL OCCURRENCES	12
	4.4 SURFACE MINEABLE RESOURCE BASE	13
	4.5 DEVELOPMENT CONCEPT	15
	4.5.1 General Approach	16
	4.5.2 Mining	17
	4.5.3 Coal Processing	21
	4.5.4 Site Services and Infrastructure	21
	4.5.5 Capital Costs	22
	4.5.6 Operating Costs	27
	4.5.7 Financial Analysis	28

TABLE OF CONTENTS (continued)

		PAGE
5.	**GOODRICH SOUTH-TABLE PROSPECT**	32
	5.1 PROPERTY DESCRIPTION	32
	5.2 GEOLOGY	32
	5.3 COAL OCCURRENCES	33
	5.4 SURFACE MINEABLE RESOURCE BASE	34
	5.5 DEVELOPMENT CONCEPT	35
	5.5.1 General Approach	36
	5.5.2 Mining	36
	5.5.3 Site Services and Infrastructure	38
	5.5.4 Financial Assessment	38
6.	**SOUTH CIRQUE PROSPECT**	
	6.1 PROPERTY DESCRIPTION	41
	6.2 GEOLOGY	41
	6.3 COAL OCCURRENCES	43
	6.4 SURFACE MINEABLE RESOURCE BASE	44
	6.5 DEVELOPMENT CONCEPT	46
	6.5.1 General Approach	46
	6.5.2 Mining	47
	6.5.3 Site Services and Infrastructure	49
	6.5.4 Financial Assessment	49
7.	**HASLER CREEK PROSPECT**	52
	7.1 PROPERTY DESCRIPTION	52
	7.2 GEOLOGY	52
	7.3 COAL OCCURRENCES AND RESOURCES	53
	7.4 MINING POTENTIAL	53

TABLE OF CONTENTS (continued)

		PAGE
8.	**GOODRICH CENTRAL PROSPECTS**	
	8.1 PROPERTY DESCRIPTION	55
	8.2 GEOLOGY	55
	8.3 COAL OCCURRENCES AND RESOURCES	58
	8.4 MINING POTENTIAL	59
9.	**BEAUDETTE SYNCLINE PROSPECT**	60
	9.1 PROPERTY DESCRIPTION	60
	9.2 GEOLOGY	60
	9.3 COAL OCCURRENCES AND RESOURCES	61
	9.4 MINING POTENTIAL	62
10.	**COAL QUALITY**	63
11.	**RECOMMENDATIONS**	65
12.	**CONCLUSIONS**	66

LIST OF TABLES

		PAGE
4.3.1	Moberly Prospect Trench Summary	13
4.3.2	Moberly Prospect Summary of Surface Mineable Resources	14
4.5.1	Moberly Resource Summary	18
4.5.2	Moberly Production Schedule-3.0 MM Tonnes/Yr.	17
4.5.3	Major Mining Equipment Moberly Development-3.0 MM Tonnes/Yr.	20
4.5.4	Major Mining Equipment Performance	20
4.5.5	Moberly Development Summary of Capital Costs-3.0 MM Tonnes/Yr.	24
4.5.6	Moberly Capital Expenditure Schedule-3.0 MM Tonnes/Yr.	25-26
4.5.7	Moberly Operating Costs-3.0 MM Tonnes/Yr.	27
4.5.8	Summary of Financial Analysis Moberly Prospect 100% Equity - Escalated-3.0 MM Tonnes/Yr.	29
4.5.9	Summary of Financial Analysis Moberly Prospect 20% Equity/80% Debt - Escalated-3.0 MM Tonnes/Yr.	30
5.4.1	Goodrich South - Table Prospect Summary of Surface Mineable Resources	34
5.5.1	Table and Lossan Quantity Summary	37
5.5.2	Table and Lossan Production Schedule-3.0 MM Tonnes/Yr.	37
6.3.1	South Cirque Prospect Coal Seam Identification	44
6.4.1	Goodrich South Cirque Prospect Summary of Surface Mineable Resources	45
6.5.1	South Cirque Resource Summary	47
6.5.2	South Cirque Production Schedule-3.0 MM Tonnes/Yr.	48
8.3.1	Goodrich Central North-Summary of Coal Seam Data	58

LIST OF FIGURES

	FOLLOWS PAGE
Prospect Locations	5
Regional Location Map	5
Property Location Map	6
Coal Districts of the Pine River Region	7
Regional Geology Map	7
Moberly Prospect	11
Moberly Prospect Surface Mineable Areas	14
Moberly Prospect - General Layout	16
Coal Release Graph-Moberly Development	18
Operating Cost Sensitivity - 100% Equity - Inflated	29
Operating Cost Sensitivity 20% Equity/80% Debt - Inflated	31
Table Area Prospect	32
Goodrich South Table Area-General Layout	36
South Cirque Prospect	41
South Cirque Prospect-General Layout	46
Coal Release Graph-South Cirque Development	47
Hasler Creek Prospect	52
Goodrich Central-South Prospect	55
Goodrich Central-North Prospect	55

1. SUMMARY

Gulf Canada Resources Inc. holds 276 crown coal licences (80 681 hectares) known as the Goodrich Coal Property. This property is located in the Inner Foothills of Northeastern British Columbia, some sixty road kilometres west of Chetwynd, B.C.

The Goodrich Property covers sedimentary strata ranging from Upper Jurassic to Lower Cretaceous in age. Structurally it contains folded and faulted strata which trends in a northwesterly direction.

The total in-place coal resources for the Goodrich Property have been estimated to be 2.35 billion tonnes. It is apparent that the property has the potential to contain one of the largest coal resources within the Peace River Coalfield.

Exploration, to the present, has defined one mining area, the Lossan Mine Area, and identified seven other prospects with potential for surface mining operations. The Lossan Mine Area has recently been subjected to a preliminary feasibility study, based on the exploration data gathered from 1979 to 1981. The present study uses all current data and evaluates the surface mining potential of three of the prospect areas including:

a) The Moberly Prospect
b) The Goodrich-South Table Prospect
c) The Goodrich South Cirque Prospect

Current data regarding the remaining four prospect areas are also presented.

Surface mineable resources for identified pit areas have been calculated for the three prospects listed above and these results, along with data for the Lossan Mine Area, are tabulated below. The present evaluation shows economic advantages for combining the Table Prospect with the development of the Lossan Mine Area and resources for those combined mines are also shown on the table.

SURFACE MINEABLE RESOURCES

Mine Area	(Millions)	Strip Ratio
Lossan	79.5	10.24
Table	49.9	4.06
Lossan-Table	**129.4**	**7.85**
Moberly	**147.5**	**7.88**
South Cirque	**130.6**	**8.13**
Total	**407.5**	**7.95**

It is clear that the Goodrich Coal Property has the potential to supply at least 400 million tonnes of raw coal at a strip ratio of 8.0:1 or less. The quality of the coal from the various prospect areas is not expected to vary significantly from that already defined for the Lossan Mine Area.

Preliminary engineering and feasibility studies conducted to date indicate that within the individual prospect areas of the Goodrich Property a large resource base exists which is amenable to open pit extraction. The property could be developed to meet a variety of thermal and metallurgical coal market conditions. For example, the Table Prospect could be developed independently to supply coal at a modest annual production rate of 1.5 million tonnes for more than 20 years. Alternatively, if the full potential of the three prospect areas of Moberly, Table and South Cirque was combined with the Lossan Mine, a total of 14.0 million tonnes of product coal for a 20 year period could be supplied annually.

The location and nature of the prospect areas does not require any sophisticated technology. Conventional truck/shovel open pit mining can be used at all the prospect areas that have been evaluated, and well proven coal cleaning techniques such as jigs or heavy medium treatment can be used, depending on the desired product. The technical risks associated with the planned implementation of this kind of equipment is low due to the long history of its usage.

The Moberly Prospect is especially attractive for future exploration and development, not only because of the present indication of favourable seam thicknessess and low strip ratios, but also because of its location with respect to available infrastructure. Many of the infrastructure capital cost items usually included in a mining evaluation, already exist or their cost is greatly reduced due to the prospect location. The financial analysis conducted to assess the development potential of the prospect gives a 28.8% D.C.F. rate of return and a 2.5 year pay back period for a 100% equity case. A debt financed case shows even better rates of return.

The Table Prospect can easily be integrated with a development in the Lossan Mine Area or stand on its own because of the low stripping ratios. It could constitute an expansion of production tonnages, early development of low cost coal, or a combination of both if combined with the Lossan Mine Area. Although a cash flow analysis has not been performed to test the economic viability of the Table Prospect, capital and operating costs have been estimated for a combined Table-Lossan development. The results of the evaluation indicate that this combined development would be economically attractive; the operating costs are similar to those estimated for the Moberly Prospect and the capital costs are lower than those estimated for the Lossan Mine.

The South Cirque Prospect provides the opportunity for greatly increased annual production rates. Capital and operating costs have also been estimated for this prospect and, while a cash flow analysis was not performed, a comparison with the results from the other two assessments indicates economic viability here as well. However, at present, the economic potential of this prospect appears to be lower than that of Moberly or the combined Lossan-Table developments.

The remaining prospects areas should not, of course, be overlooked but the identification of these areas at present can only increase the mining potential of the property as a whole.

2. INTRODUCTION

In 1979 Gulf Canada Resources Inc. increased its exploration activities in the Western Canadian coalfields. A program was initiated to examine the large areas of Cretaceous strata in northeastern British Columbia that were not held by other companies. During the summer of 1979 Gulf geologists succeeded in discovering substantial coal deposits in the area that is now the Goodrich Coal Property.

The Goodrich property is located within the Peace River Coalfield as designated by the British Columbia Department of Energy, Mines and Petroleum Resources. The property prior to the most recent surrenders, covered an area of 80 681 hectares consisting of 276 crown coal licences. The property is underlain by coal-bearing strata of Lower Cretaceous age.

Because of the highly competitive nature of the coal industry, Gulf decided to explore the Goodrich Coal Property as quickly as possible, and initiated a series of summer and winter exploration programs. To date Gulf Canada Resource Inc. has completed four field programs and three years of ongoing data compilation and interpretation. As a result of these activities it has been determined that the Goodrich Coal Property contains major coal bearing formations and mineable coal deposits. To date, seven potentially mineable prospects have been identified in addition to the Lossan Mine Area which was recently the subject of a preliminary feasibility study. The results of that study, which was based on data collected prior to 1982, clearly demonstrated the mining potential for the production of thermal coal from at least one part of the Goodrich Property.

The present study provides an evaluation of the mining potential of three of the other seven prospect areas that have been located on the Goodrich Coal Property to the present time. Additional information is supplied for comparison regarding the remaining four prospect areas and all of this work is based on the total exploration data that is available at present.

The resource areas for which a mining evaluation has been completed include:

a) the Moberly Prospect;
b) the Goodrich-South Table Prospect; and
c) the South Cirque Prospect.

The remaining prospect areas include:

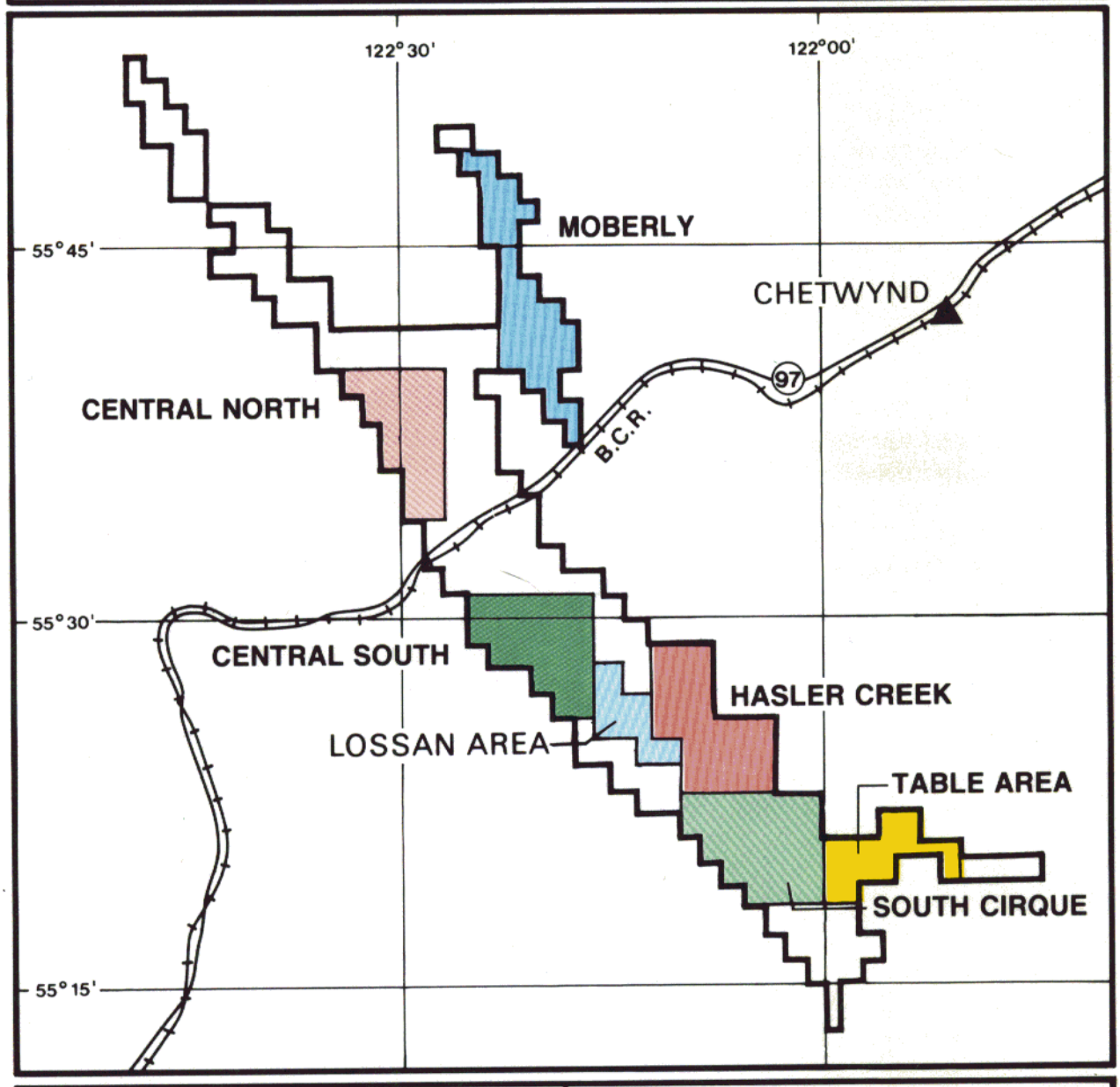
a) the Beaudette Syncline Area;
b) the Hasler Creek Area;
c) the Goodrich Central North Area; and
d) the Goodrich Central South Area.

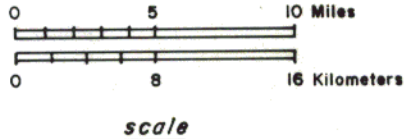
The following figure illustrates the location of those prospects and the Lossan Mine Area within the Goodrich Coal Property.

In the evaluation of the mining potential of the three prospect areas listed above, only coal seams that appear to be mineable by surface methods have been considered. Coal tonnages quoted in the text are referred to as **resources** because a significant amount of geological exploration remains to be completed in the seven prospect areas to allow integrated mineable blocks to be placed in a **reserve** category. Nevertheless, given this present geological limitation, an attempt has been made to identify discrete areas of coal over which the practical development of surface mines can be considered. Therefore, for the three prospect areas subjected to the closest scrutiny in this study, two coal resource figures are stated. One of these figures refers to the **total in place resource** for the prospect while the other refers to a **resource of coal mineable by surface methods** at acceptable stripping ratios in seams of acceptable mining thickness, based on the present understanding of the coal geology of each prospect.

GOODRICH COAL PROPERTY

PROSPECT LOCATIONS





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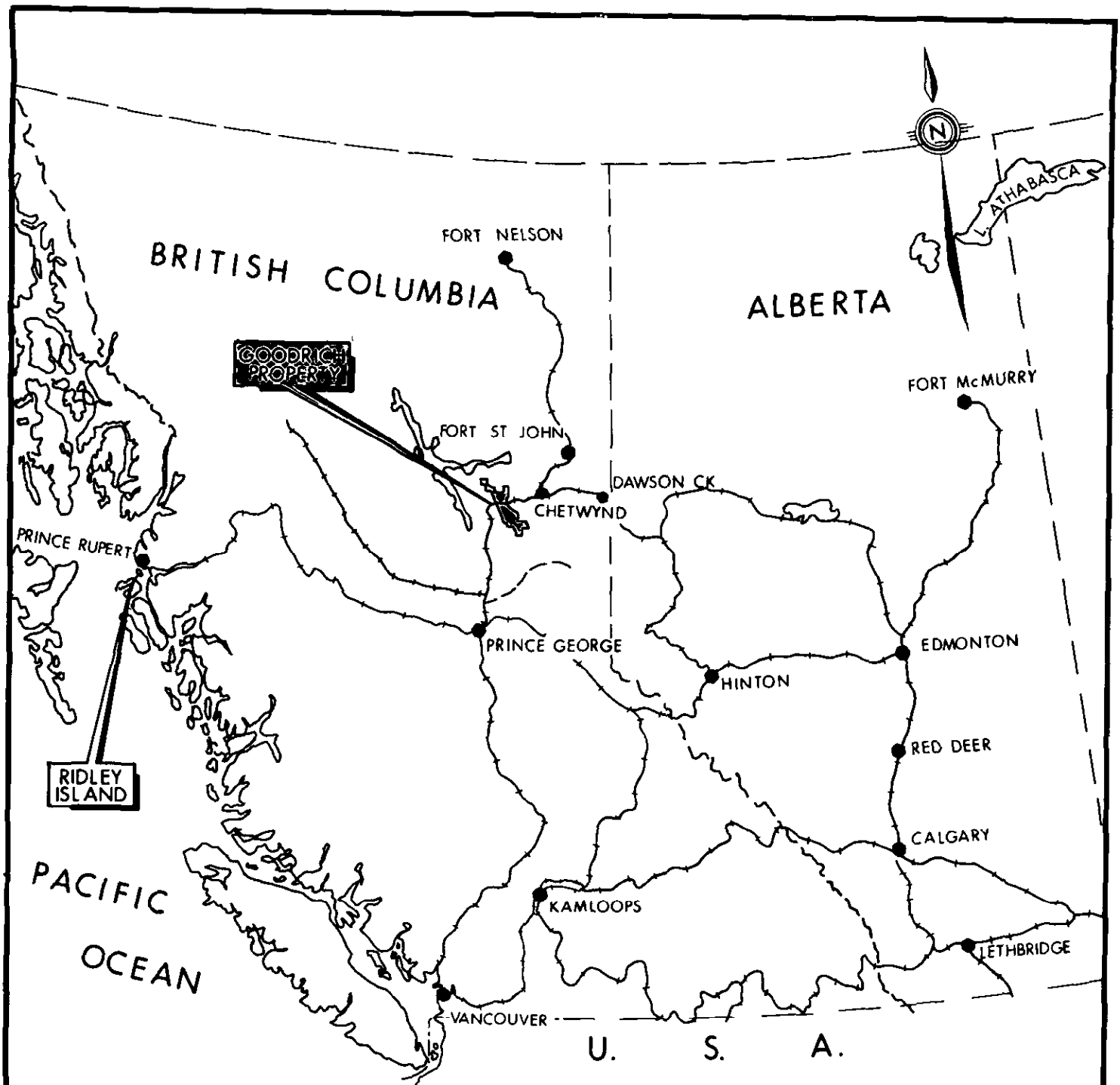


REGIONAL LOCATION MAP

NorWest
Resource Consultants Ltd

3. PROPERTY DESCRIPTION

3.1 LOCATION

Situated approximately 60 kilometres by road west of Chetwynd, British Columbia, Gulf's Goodrich Coal Property consists of 276 crown coal licences covering an area of 80 681 hectares. The coal licences lie within the Inner Foothills of the Rocky Mountains in northeastern British Columbia. The preceeding figures illustrate the location of the property within the province.

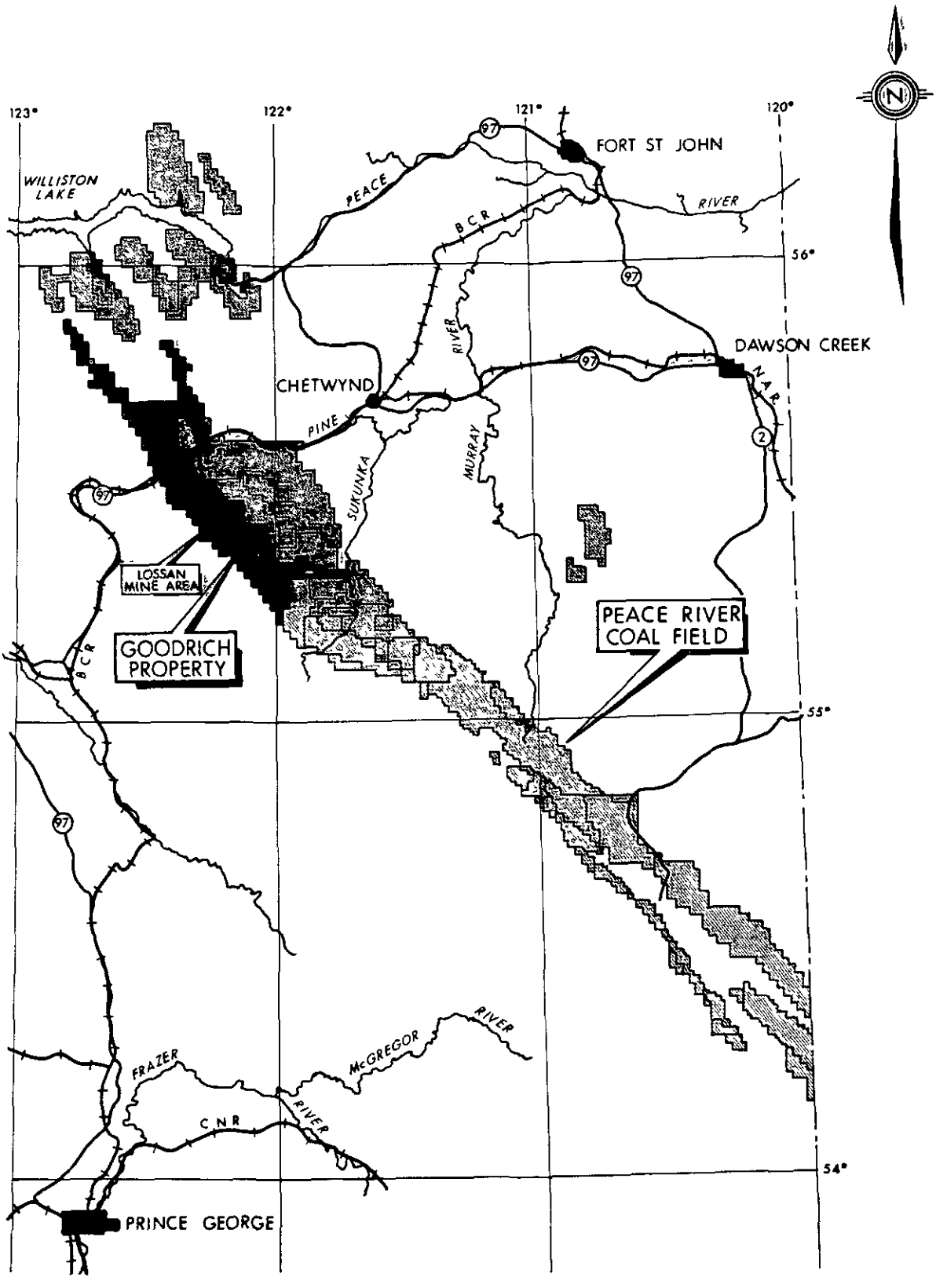
The licences cover northwest trending coal-bearing strata for approximately 90 kilometres of strike length. The property, which extends from the Burnt River in the south to Eleven Mile Creek in the north, covers approximately 800 square kilometres and is one of the largest in the northeast coalfield. The position of the Goodrich Coal Property with respect to other properties in the Peace River District is shown in the figure on the following page.

3.2 CHARACTERISTICS OF THE PROPERTY

Gulf Canada Resources Inc.'s reconnaissance exploration program in 1979 resulted in the identification of a coalfield in northeastern British Columbia, that had been largely ignored by earlier explorers. Licences were therefore applied for over several hundred square kilometres which forms a coalfield in its own right. The coal licences are collectively referred to as the Goodrich Coal Property, and they cover an area that contains mostly Cretaceous strata.

Cretaceous rocks are exposed along the entire Foothills Belt of the Rocky Mountains. These rocks contain deposits of several major deltas and reveal a complex interrelationship of continental and marine sediments.

Geologically the Goodrich Coal Property consists of an elongated, northwest trending, tectonic slice of coal-bearing and non coal-bearing Lower Cretaceous to Jurassic sediments including strata of the Fernie Formation and the Beaudette, Crassier, and Fort St. John Groups.



PROPERTY LOCATION MAP

Coal measures are found in the Brenot, Dresser and Gething Formations of the Crassier Group. The location of the Goodrich Coalfield with respect to other coal districts in this part of the foothills of the Rocky Mountains, is illustrated on the first of the following two figures. The second figure shows details of the geology of the property.

3.3 PHYSIOGRAPHY

The foothills of the northern Rocky Mountains are moderately rugged, being somewhat subdued versions of the main ranges to the west. Relief is in the order of 900 metres to occasionally 1200 metres; valley elevations are 680 metres to 1200 metres and mountain tops, 1800 metres to 2100 metres. The upper limit of forest cover (timber line) averages 1500 metres elevation.

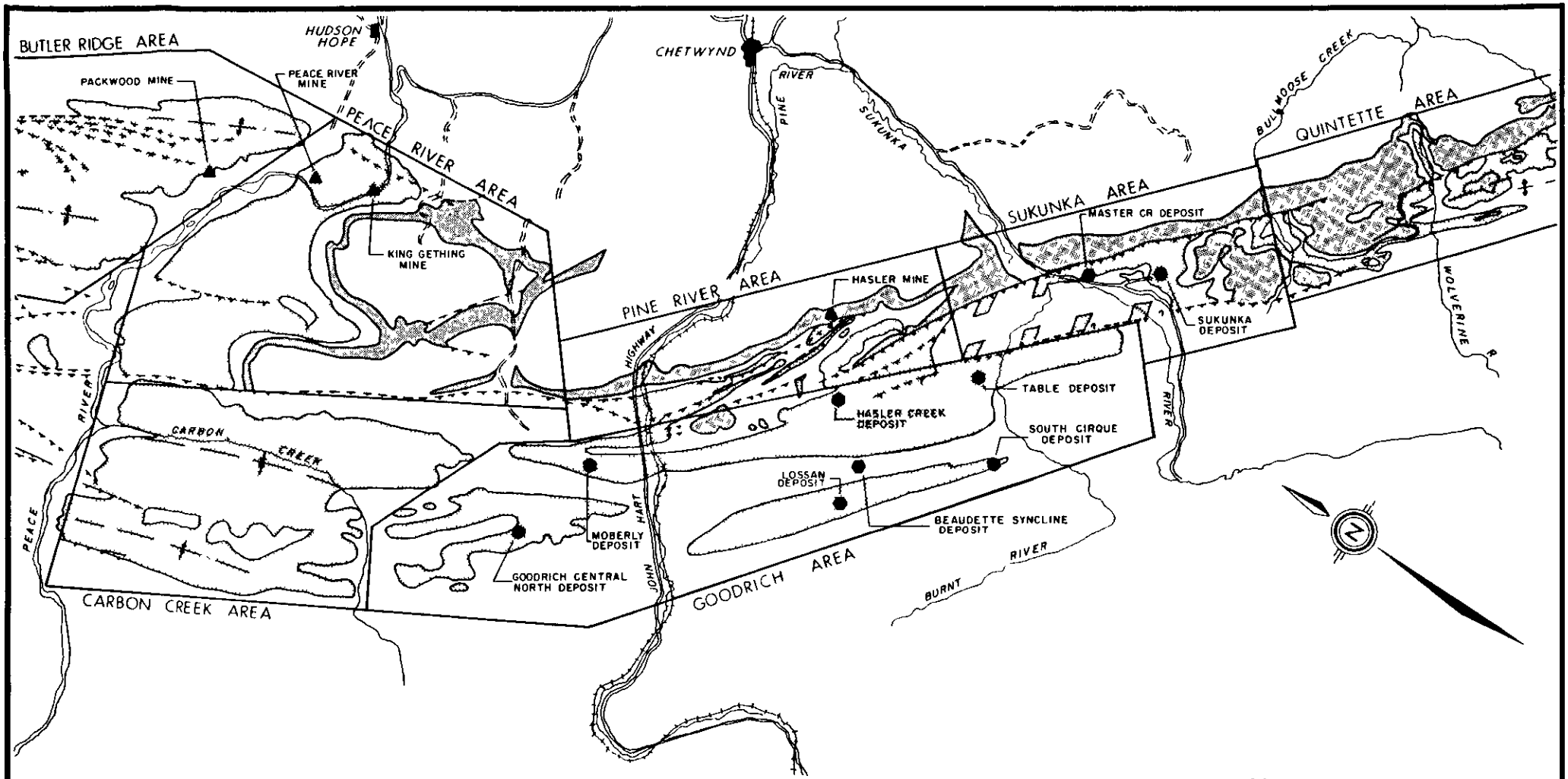
The Goodrich Coal Property is characterized by heavily glaciated northwesterly trending ridges and valleys with elevations ranging from 2100 metres at Mt. Stephenson to 680 metres at the Pine River valley. The average elevation within the Lossan Mine Area is 1100 metres.

All major drainage is to the northeast into the MacKenzie River watershed and, ultimately, the Arctic Ocean. The property is drained by portions of the Pine, Moberly and Sukunka River Watersheds

Vegetation ranges from alpine tundra in the higher elevations to sub-alpine spruce and fir on the uplands adjacent to the river valleys.

3.4 CLIMATE

The climate of the northern Rocky Mountains is uniform but also somewhat severe. The chief characteristic is the long winter, susceptible to coal periods when continental polar air sweeps out of the north. The mean daily temperature of the warmest month is 13^{o} to $15^{o}C$, and of the coldest month, -12^{o} to $-9^{o}C$. In the Goodrich area there are 5 to 7 months with mean temperatures below freezing. Precipitation is light, averaging 50 to 60 centimetres per year; snowfall is in the range of 130 to 1250 centimetres per year.



LEGEND

- COMMOTION FORMATION
- GETHING FORMATION
- SYNCLINE
- ANTICLINE
- THRUST FAULT
- EXPLORED COAL OCCURRENCES
- ROADS MAIN / SECONDARY
- RAILROAD (BCR)

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY

COAL DISTRICTS OF THE PINE RIVER REGION

Norwest Resource Consultants Ltd

PREPARED BY	G R J	SCALE	BAR
APPROVED BY	T E	DATE JAN '83	DRAWING No

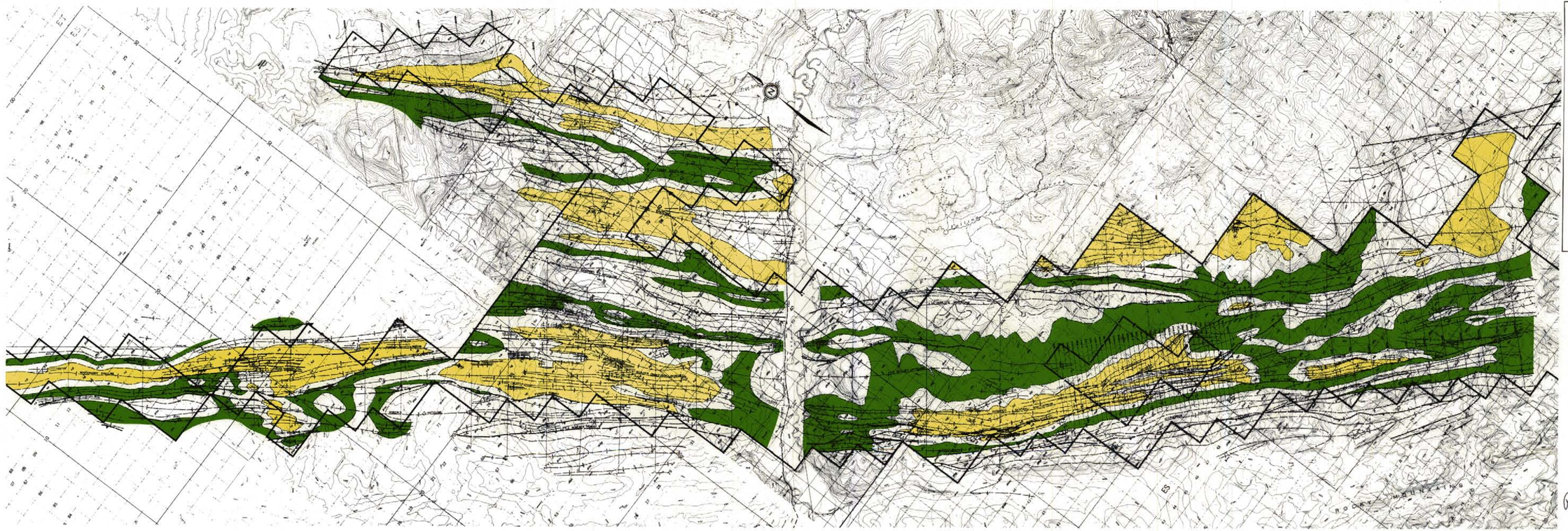


TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
Lower Cretaceous	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones, mudstones; thin conglomerate unit at top with or without glauconite
CRASSIER GROUP	Kgt	GETHING FORMATION Cyclothemic, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
	Kd Kd-f	DRESSER FORMATION Inconsistent cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates. (Kd-f mostly conglomeratic)
	JKbr	BRENOT FORMATION Litho: "salt and pepper" sandstones, siltstones, mudstones; carbonaceous mudstones, COAL
BEAUVETTE GROUP	JKmo	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with viscidure banding
	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shale, and shales with siltstone and sandstone partings; occasional thin conglomerates
Jurassic	Jf	FERNIE FORMATION Dark grey and black shales; mudstones, sandstones, siltstones, marine

LEGEND

GEOLOGICAL SYMBOLS

- Coal Seam Subcrop
- Geological Boundary (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone-Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

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Coal Division
CALGARY ALBERTA

P/C

GOODRICH COAL PROPERTY
REGIONAL GEOLOGY MAP

PREPARED BY	GOODRICH GEOLOGICAL STAFF	SCALE	
APPROVED BY	C. WILLIAMS	DATE	OCT. '82
		DRAWING No.	

3.5 REGIONAL INFRASTRUCTURE

3.5.1 Roads

The Goodrich Property straddles the Pine River Valley, a transportation corridor which includes the John Hart Highway (Highway No. 97). The main access to the property is provided by this highway and the Hasler Creek Road, an all-weather gravel road which joins the John Hart Highway some 26 kilometres west of Chetwynd.

Several secondary access roads, constructed by the forestry companies during logging operations, provide additional access to the southern portion of the property. Limited road access is available north of the John Hart Highway in the form of seismic lines and service roads for power transmission lines. A large portion of the Goodrich Property is accessible at present only by helicopter.

The Goodrich Central South Prospect which includes the Lossan Mine Area, south of the corridor, is accessed via the gravelled all-weather Hasler Creek Road. The Beaudette Syncline and the Hasler Creek Prospect both have direct road access from the Hasler Creek road as well. The Moberly Syncline and the Moberly Monocline have direct road access from the transmission line service road which joins the John Hart Highway.

Direct road access is not presently available for the Goodrich Central North Prospect, the Goodrich South-Table Prospect and the South Cirque Prospect but all of these locations are within short road construction distances from the John Hart Highway, the Hasler Creek Road or from the existing road system in the Sukunka River Valley.

3.5.2 Railroads

The British Columbia Railway, which lies within the Pine River Valley transportation corridor, crosses the Goodrich Property. Several of the mining

prospect areas of the Goodrich Property are located so close to this railroad that the construction of spur lines to service mines in those deposits will not be required. Relatively short conveyors can be constructed from most of the prospect areas to the existing rail line in the Pine River Valley.

Should direct rail spur servicing be required for the Goodrich South-Table Prospect and the Goodrich South Cirque deposit a spur line also leading to the Lossan Mine Area, could be constructed. Alternatively a spur line could be constructed from these deposits to the south to join the British Columbia Railway line presently under construction from Anzac to Tumbler Ridge, B.C. The point of connection for such a spur line would be located near Hook Lake, B.C., a distance of approximately 35 kilometres from the proposed loadout loop for the South Cirque Prospect development.

3.5.3 Electrical Power

The source of electrical energy for the Goodrich Property, as identified by B.C. Hydro, will be the 230 kV line to Tumbler Ridge. The connection point to this line will be located where the powerline leaves the Sukunka Valley enroute to Tumber Ridge. This 230 kV power source would then be brought to the mine sites by an overhead pole-line. Mine area distribution would be by 25 kV power lines.

3.5.4 Townsite

The construction of a new town will not be required for the development of any of the prospect areas on the Goodrich Coal Property. The village of Chetwynd, with a present population of about 3500 is suitably located to provide accommodation and the social requirements for the mine workforce.

Chetwynd, originally called Little Prairie, is a major transportation hub in northeastern British Columbia. The community is located on the John Hart Highway (No. 97) which runs from Prince George through Dawson Creek and

continues into Alberta. Highway No. 29 connects Chetwynd with Hudson Hope and Fort St. John, B.C. In addition, the British Columbia Railway from Prince George bisects in Chetwynd, a transhipment centre. One route leads north to Fort Nelson, and the other east to Dawson Creek.

Chetwynd represents a very stable environment from which the Goodrich Project can draw its workforce. There are substantial numbers of unemployed and young people who will enter the workforce in the near future. This, coupled with the number of people who would transfer from other industries into the mining sector, should provide a good base on which to develop a stable workforce.

3.5.5 Port Facilities

The coal loading facility presently under construction on Ridley Island at Prince Rupert, B.C., will be able to accommodate the ship loading of coal from the Goodrich Property for export. The port has a design capacity of 12 million tonnes per annum and is presently committed to the handling of only 8 million tonnes of coal per annum. Consequently there is sufficient surplus capacity available to handle the production from any of the coal prospects on the Goodrich Coal Property.

4. MOBERLY PROSPECT

4.1 PROPERTY DESCRIPTION

The Moberly licences cover an area situated in the outer foothills of the Rocky Mountains. This area extends northwest from the Pine River to just south of Mt. McAllister, west to Mt. Bickford, and east to Crassier and Fred Nelson Creeks. The location and geology of this prospect area is illustrated on the following figure.

The terrain in this part of the Goodrich Coal Property is somewhat rugged with maximum elevations of 1700 metres and relief of 900 metres.

Surface access to this prospect is presently available via a power transmission line service road that joins the John Hart Highway, located immediately south of the Moberly licences.

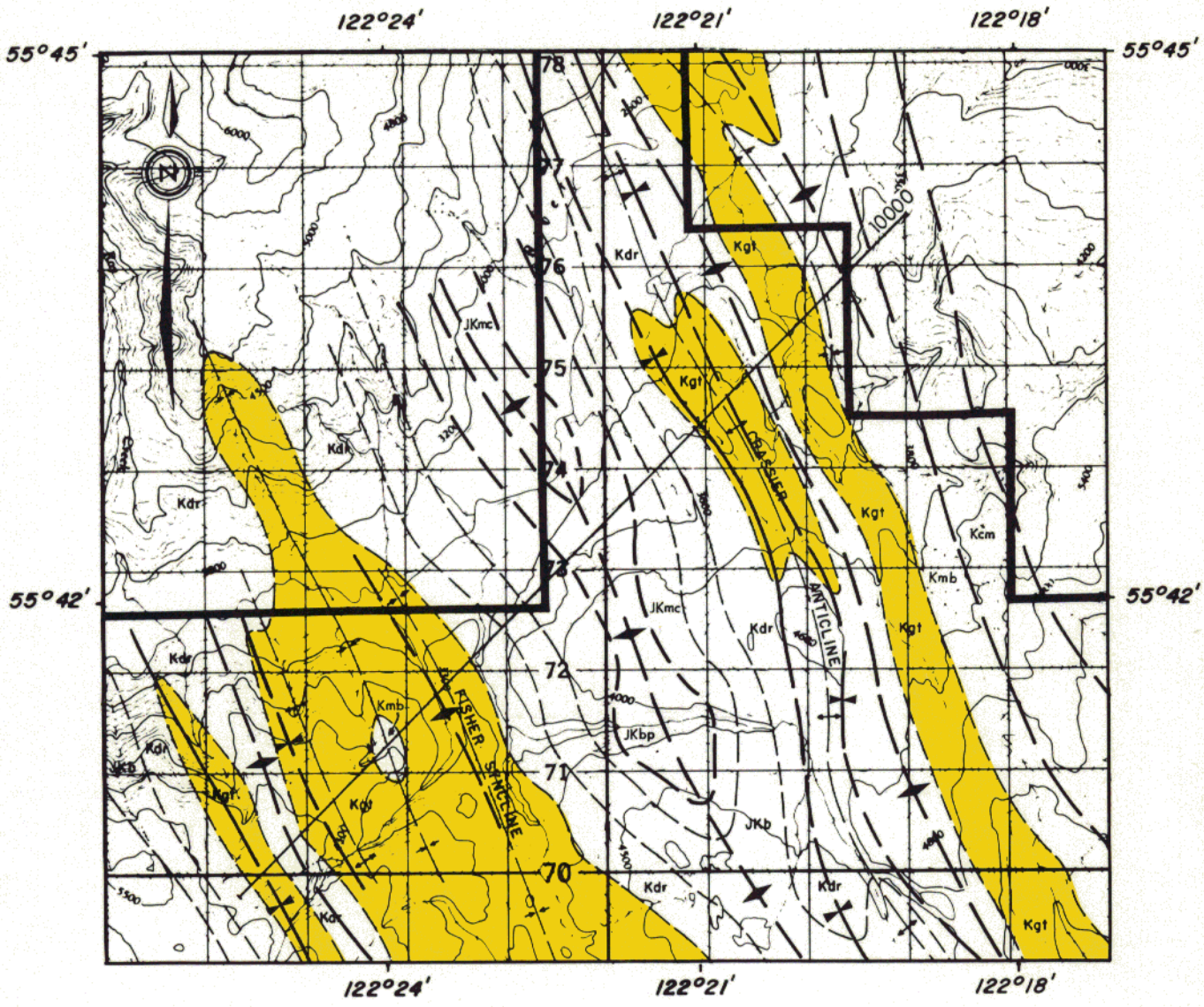
4.2 GEOLOGY

Northwesterly trending folds and minor southwest dipping thrust faults in the Moberly block expose strata from the Jurassic-Cretaceous Monteith Formation to the Cretaceous Goodrich Formation, the youngest formation found on the Goodrich property.

There are three major folds in the strata of the Moberly Area: The Fisher and Crassier Anticlines, and the Fisher Syncline. The Bickford Anticline straddles the boundary of the Moberly and Goodrich Central Areas. These folds trend northwest-southeast and plunge approximately 2^{o} to 5^{o} to the southeast. With the major folds, there are associated minor folds and a few small overturned folds that accompany thrust faulting.

The Fisher Anticline extends from the northwest to the southeast almost through the centre of the Moberly licences and east of the Fisher Syncline. This structure exposes the oldest strata of the area and generally plunges to the southeast with minor plunge reversals throughout its length. The Crassier

GOODRICH COAL PROPERTY
MOBERLY PROSPECT



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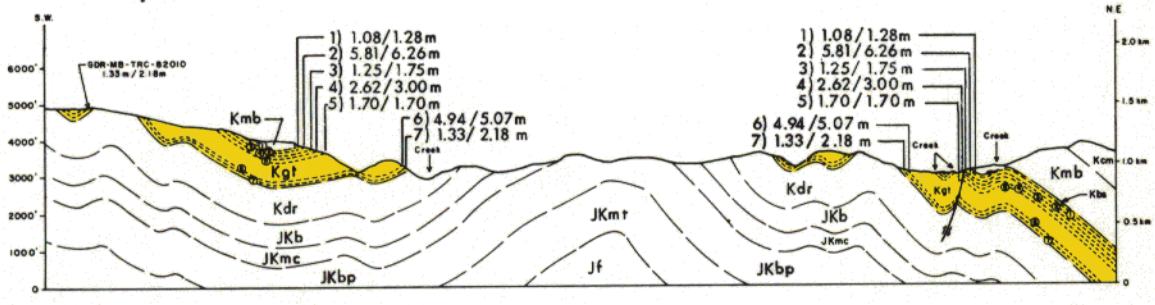
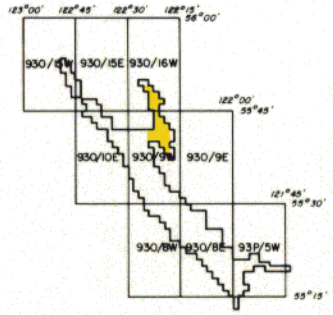




LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Kgt — Gething
- Kdr — Dresser
- JKb — Brenot

Anticline trends approximately parallel to the Fisher Anticline and also plunges to the southeast. This Anticline does, however, go through plunge reversal at the Moberly River and also 5 kilometres northwest of the Pine River where it regains its southeast plunge. The Crassier Anticline is interpreted to be the largest parasitic fold on the dominant Fisher Anticline.

The Fisher Syncline provides the major exposure of Gething Formation sediments on the Moberly licences. This structure trends northwest-southeast between the Moberly and Pine Rivers approximately 4 kilometres east of Bickford Lake. The Syncline is interpreted to be a broad synclinorium containing many discontinuous parasitic folds with a plunge averaging 5^{o} to the southeast.

There are only two faults which are significant in the strata of the Moberly Area: the Carbon Thrust in the northern half of the area, and a thrust associated with and lying to the east of the Bickford Anticline. Both of these faults lie almost entirely outside of the areas of potential mineable resources.

The Carbon Thrust extends southeast from Mt. McAllister and dies out north of the Moberly River. Where this fault passes into the Moberly licences from the north, it has an interpreted displacement of approximately 500 metres. The Thrust fault to the east of Bickford Anticline lies predominantly within sediments of the Monteith Formation and is interpreted to have a displacement of approximately 100 metres. Other localized thrust faulting is present.

4.3 COAL OCCURRENCES

During the 1982 exploration program a total of 18 trenches were excavated bringing the total to 30 recorded trenches on the Moberly licences. All significant coal exposures found and trenched were in the Gething Formation

A study of the trench data in conjunction with information from diamond drill hole GDR-DDH-81-12 indicates that there are at least seven coal seams, with an aggregate mineable thickness ranging from 18 metres to 21 metres, within the Gething Formation. The first five seams lie in the upper half of the formation while the remaining two seams lie at the base of the formation. Table 4.3.1 shows the trenches and seam thicknesses encountered in the Gething Formation on the Moberly licences.

TABLE 4.3.1
MOBERLY PROSPECT TRENCH SUMMARY

Seam No.	Data Source	Coal/Coal plus Rock True Thickness
1	GDR-MB-TRC-82006	1.08 m/1.28 m
2	GDR-MB-TRC-82015	5.81 m/6.26 m
2	'Hughes trench' 1980	2.96 m/2.96 m
3	TR-MB-81-05	1.25 m/1.75 m
4	GDR-DDH-81-12	262 m/3.00 m
5	GDR-DDH-81-12	1.70 m/1.70 m
6	TR-MB-81-02	4.94 m/5.07 m
7	GDR-MB-TRC-82010	1.33 m/2.18 m
7	GDR-MB-TRC-82014	207 m/2.89 m

During 1982, three trenches were dug in the Dresser Formation (upper part); where the coal/coal plus rock interval was 0.79 m/0.81 metres in GDR-MB-TRC-82007. No significant coal was uncovered in the Brenot Formation but this could be due in part to generally poor exposure of this formation on the Moberly licences.

4.4 SURFACE MINEABLE RESOURCE BASE

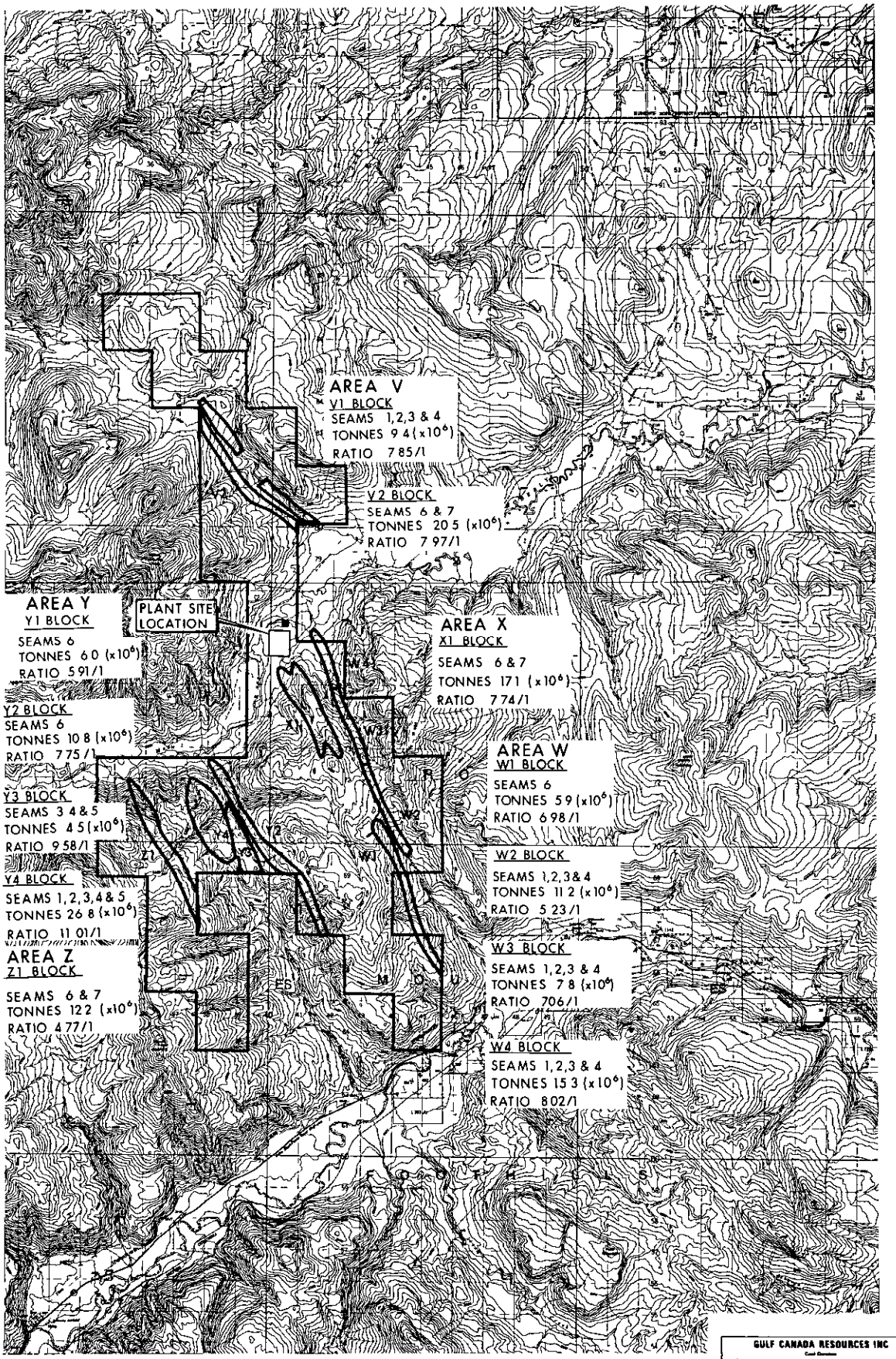
The Moberly area contains the largest in place coal resource base of any single prospect area on the Goodrich Property, and appears to contain most of the Gething Formation in place coal resources outside the Lossan Mine Area. **In place coal resources** for the Gething Formation in the Moberly Area have been calculated to be **619 million tonnes.**

Within the in place coal resources a calculation was made of a surface mineable coal resource base. The geology of this prospect was reviewed and individual continuous areas of strata were identified over each of which a practical plan for a surface mine could be developed. These areas consist of closed geological structures or dip slope situations that contain seams in excess of one metre thickness. The following figure illustrates the five separate surface mining areas that were deterimed for the Moberly Prospect. The surface mineable resource base, strip ratios, and included seams are shown in Table 4.4.1.

TABLE 4.4.1
MOBERLY PROSPECT
SUMMARY OF SURFACE MINEABLE RESOURCES

Block	Seam Indentification	Tonnes (Millions)	Strip Ratio
V-1	1, 2, 3 & 4	9.4	7.85
V-2	6 & 7	20.5	7.97
W-1	6	5.9	6.98
W-2	1, 2, 3 & 4	11.2	5.23
W-3	1, 2, 3 & 4	7.8	7.06
W-4	1, 2, 3 & 4	15.3	8.02
X-1	6 & 7	17.1	7.74
Y-1	6	6.0	5.91
Y-2	6	10.8	7.75
Y-3	3, 4 & 5	4.5	9.58
Y-4	1, 2, 3, 4 & 5	26.8	11.01
Z-1	6 & 7	12.2	4.77
Total		147.5	7.88

As shown on this table the Moberly Prospect has **a surface mineable resource base** of **147.5 million tonnes** at a strip **ratio of 7.88 /1.**



GULF CANADA RESOURCES INC
CALGARY ALBERTA

GOODRICH COAL PROPERTY
SURFACE MINEABLE RESOURCES
MOBERLY PROSPECT

PREPARED BY	T E	SCALE	SAR
APPROVED BY	T E	DATE JAN '83	DRAWING No.

The cross-section method of calculation was used to determine this resource base tonnage. Seam lengths to the cropline or a pit highwall were measured and the seam thickness supplied by Gulf geologists was applied over these individual lengths. The strike length was then applied to determine coal volumes. These lengths varied according to the continuity of geological and topographic conditions. Coal tonnages were determined by applying a specific gravity of 1.5 which, based on the preliminary seam data for the Moberly Prospect, approximates a raw coal specific gravity when combined with mining losses and the effects of dilution. Thus the applied specific gravity is expected to approximate the factor that would be needed to determine run-of-mine tonnes from the equivalent amount of in place resources for the Moberly Prospect and is based on a similar combined factor developed for the Lossan Mine Area.

The total area of coal and overburden was measured on the appropriate portion of the cross-sections and individual strip ratios by section were calculated. These values were combined to determine the applicable strip ratio for each block within a mining area.

The individual values for each cross-section of coal tonnage and ratio were then combined to determine total tonnages and average strip ratios for each surface mining block. The results were further combined to determine the total tonnage of surface mineable coal resources available for the prospect at the strip ratio shown in Table 4.4.1.

4.5 DEVELOPMENT CONCEPT

For development purposes the Moberly Prospect can be considered as an independent mining area and has the following attractive features:

a) The resource base can support an operation of 5.0 million clean tonnes per year for a 21 year period at an average raw coal strip ratio of 7.88:1.

b) At a 3.0 million tonne annual clean coal production rate the reserve base will support a 34 year operation at the same 7.88:1 strip ratio.

c) A 20 year operation can be sustained at a 3.0 million clean tonne annual production rate at an average raw coal strip ratio of 6.79:1.

d) A conventional truck/shovel method can be used to mine the coal.

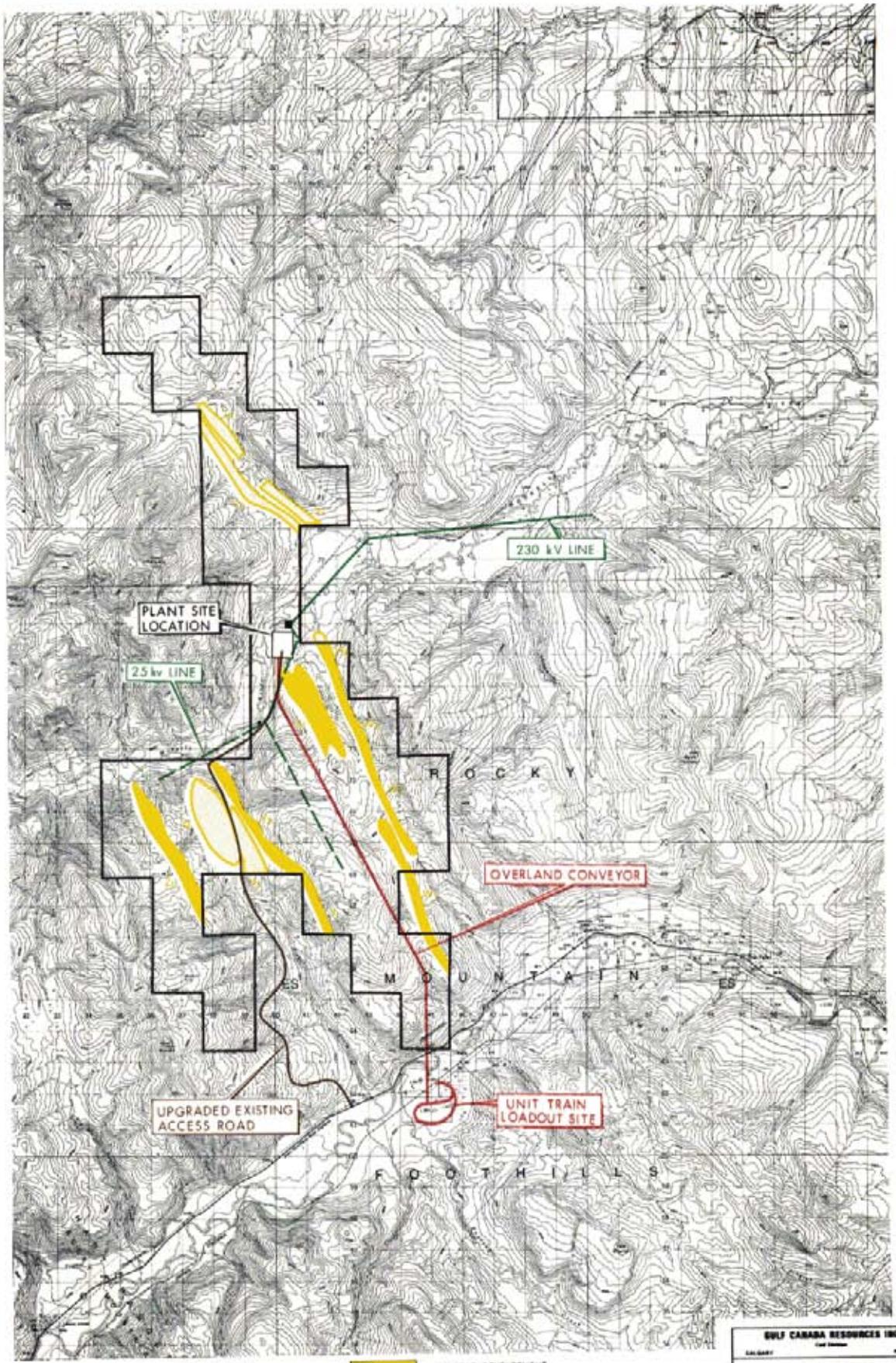
e) The site facilities to support the mining can be centrally located in the Moberly River Valley to service both the North and South portions of the Moberly deposit.

f) The regional infrastructure components such as townsite, railroad, main access, power and port facilities are essentially in place for the development of the Moberly Prospect.

The figure on the following page shows the general arrangement of the Moberly development at the 3.0 million production level. It should be noted that this plan is confined to the southern portion of the Moberly Prospect.

4.5.1 General Approach

The potential of the Moberly Prospect has been evaluated as an open pit thermal coal mine. The calculations to arrive at the resource base, amenable to open pit mining, are outlined in Section 4.4. Other data necessary for the evaluation, such as site facilities, infrastructure requirements, production rates, and capital and operating costs are from the "Preliminary Feasibility Study - November 1982" for the Lossan Mine Area. These data have been modified where necessary to suit the Moberly Prospect and to allow comparison with the Lossan Study an annual clean coal production rate of 3.0 million tonnes has been used for a 20 year operating period. A discounted ash flow analysis was performed to test the economic viability of the Moberly Prospect.


230 kV LINE
PLANT SITE LOCATION
25 kv LINE
ROCKY
OVERLAND CONVEYOR
MOUNTAINS
UPGRADED EXISTING ACCESS ROAD
UNIT TRAIN LOADOUT SITE
FOOTHILLS
COAL CONVEYOR
ROAD ACCESS
POWER LINE
MINE POWER DISTRIBUTION
20 YEAR DEVELOPMENT
UNMINED RESOURCE
ORIGINAL SCALE 1:50,000
MILES
METRES
GULF CANADA RESOURCES INC.
CALGARY
GOODRICH COAL PROPERTY
GENERAL ARRANGEMENT
SITE AND FACILITIES
MOBERLY PROSPECT
SCALE
DRAWN BY
APPROVED BY
DATE: JAN. 83

4.5.2 Mining

The coal and waste quantities that were calculated in Section 4.4. for the individual mining areas within the Moberly Propsect are shown in Table 4.5.1. These areas are considered to be distinct pits and have been assembled in the table to represent a mining sequence. The cumulative waste and coal quantities from this table are plotted as a Coal Release Graph.

The graph was used to develop the production schedule, shown in 5 year increments for the 20 year operating period, and is presented as Table 4.5.2.

TABLE 4.5.2
MOBERLY PRODUCTION SCHEDULE
3.0 MM TONNES/YR.

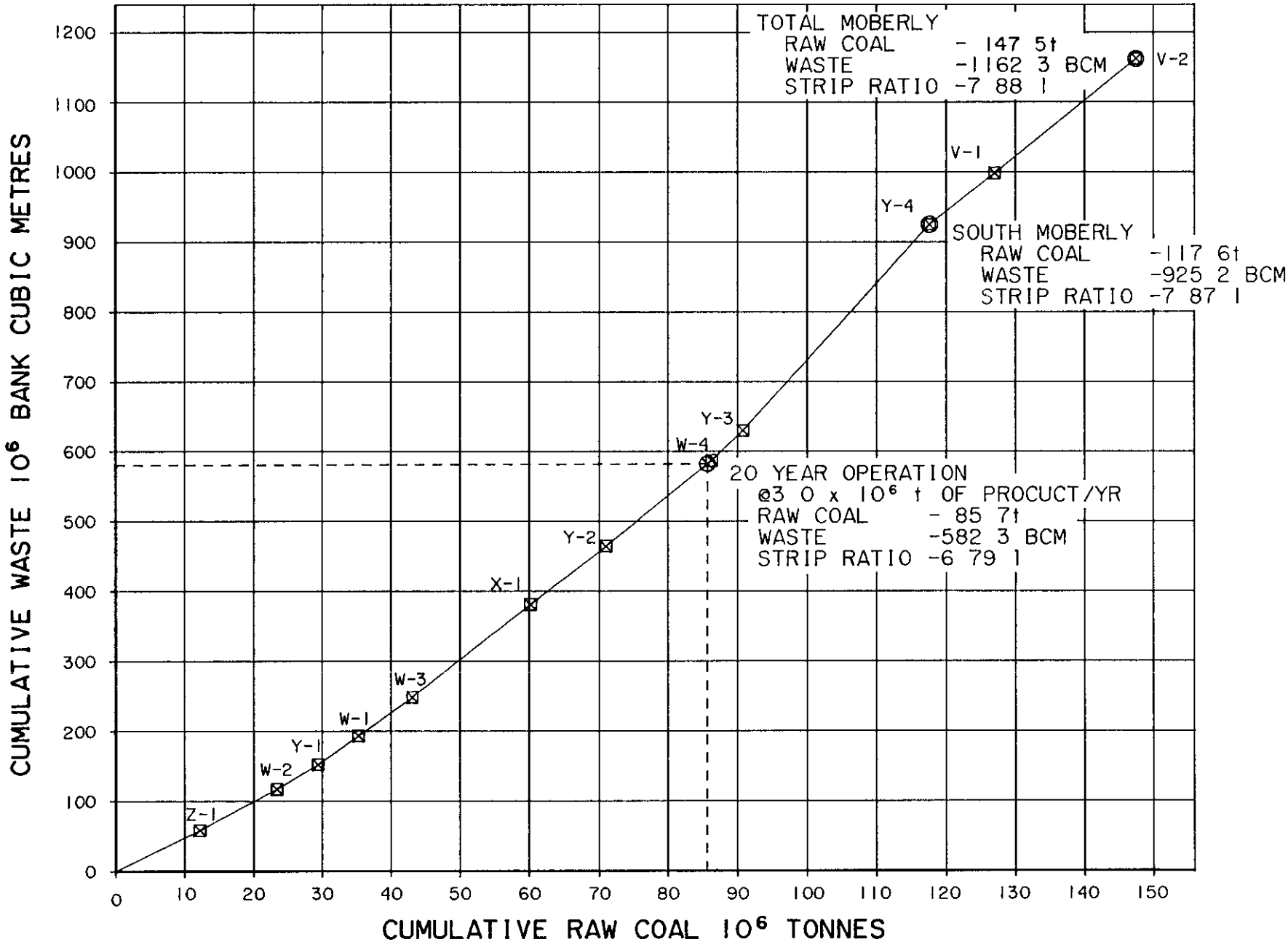
Period	Raw Coal 10^6 Tonnes	Waste 10^6 BCM	Strip Ratio
Years 1 to 5	21.425	106.3	4.96
Years 6 to 10	21.425	140.3	6.55
Years 11 to 15	21.425	165.6	7.73
Years 16 to 20	21.425	170.1	7.94
Total	85.7	582.3	6.79

TABLE 4.5.1

MOBERLY RESOURCE SUMMARY

Location	Raw Coal 10^6 Tonnes Area	Cum	Waste 10^6 BCM Area	Cum	Strip Ratio Area	Cum	Remarks
(A) South Moberly							
Z-1	12.2	12.2	58.4	58.4	4.77	4.77	Seams 6 & 7. Sections 8,000 & 10,000.
W-2	11.2	23.4	58.6	117.0	5.23	5.00	Seams 1, 2, 3 & 4. Section 6,000.
Y-1	6.0	29.4	35.2	152.2	5.91	5.18	Seam 6. Section 6,000.
W-1	5.9	35.3	41.2	193.4	6.98	5.48	6 Seam. Sections 2,000 & 4,000
W-3	7.8	43.1	55.1	248.5	7.06	5.77	Seams 1, 2, 3 & 4. Section 8,000.
X-1	17.1	60.2	132.7	381.2	7.74	6.33	Seams 6 & 7. Section 10,000.
Y-2	10.8	71.0	83.3	464.5	7.75	6.54	Seam 6. Section 8,000 & 10,000.
W-4	15.3	86.3	122.5	587.0	8.02	6.80	Seams 1, 2, 3 & 4. Section 10,000.
Y-3	4.5	90.8	43.1	630.1	9.58	6.94	Seams 3, 4, & 5. Section 8,000.
Y-4	26.8	117.6	295.1	925.2	11.01	7.87	Seams 1, 2, 3, 4 & 5. Section 10,000
Sub-totals	117.6		925.2			7.87	
(B) North Moberly							
V-1	9.4	127.0	73.5	998.7	7.85	7.86	Seams 1, 2, 3, & 4 Section 14,000 & 18,000
V-2	20.5	147.5	163.6	1162.3	7.97	7.93	Seams 6 & 7 Sections 14,000, 16,000 & 18,000
Sub-total	29.9		237.1			7.93	
Total Moberly	147.5		1162.3			7.88	

COAL RELEASE GRAPH
MOBERLY DEVELOPMENT



The 20 year mine development occurs entirely in the southern portion of the Moberly Prospect where a total of eight pits are located. At the end of the 20 year period only the higher strip ratio Y-3 and Y-4 pits remain unmined, along with a small portion of the W-4 pit.

The mining sequence is compatible with sound engineering and economic principles. Mining commences in the lower ratio areas and advances to higher ratio areas. This is clearly illustrated in the production schedule presented as Table 4.5.2. The strip ratio in the initial 5 years of operation is less than 5:1 and then progressively increases to 6.6:1, 7.7:1 and 7.9:1 in successive 5 year mining periods.

Conventional truck/shovel techniques can be used for all the mining within the Moberly Prospect. The individual pits vary in size with the largest containing about 133 million cubic metres of waste and the smallest about 35 million cubic metres. All of the pit areas are of adequate size to allow the use of large mining equipment for cost effective operation.

Compared with the Lossan Mine, the multi-pit environment of the Moberly Prospect is conducive to a more efficient truck/shovel operation. Waste disposal will be simpler because outside dump areas will have to be utilized only for the initial excavations and when these are completed they can be backfilled. This technique generally reduces the length of the waste hauls and allows the use of previously constructed road systems. Normally, in a mountain area coal deposit such as is found on the Moberly Prospect, road construction is difficult and outside waste disposal areas close to the mining operations are limited.

The equipment requirements to meet the production schedule are outlined in Table 4.5.3.

TABLE 4.5.3

MAJOR MINING EQUIPMENT-MOBERLY DEVELOPMENT

3.0 MM TONNES/YR.

Description	Number of Units Years 1-5	Years 6-10	Years 11-15	Years 16-20
21.4 m^3 Elec. Shovel	3	4	5	5
11.5 m^3 FEL	2	2	2	2
Hydr. Coal Loader	2	2	2	2
310 mm Elec. Drill	4	5	5	5
155 t Waste Truck	19	24	25	27
155 t Coal Truck	8	8	10	10
310 kW Track Dozer	10	10	10	12
220 kW Wheel Dozer	2	2	3	3
190 kW Grader	3	4	5	5
24 m^3 Scraper	2	2	2	2

The equipment is similar to the complement identified in the Lossan Mine Study. Front-end loaders for the Moberly Mine operation are slightly larger and one additional unit is required. The mobility offered by these units can be effectively used in the multi-pit environment of the Moberly Prospect.

The equipment performance and production rates are similar to those used in the feasibility study for the Lossan Mine. These are summarized in Table 4.5.4.

TABLE 4.5.4

MAJOR MINING EQUIPMENT PERFORMANCE

Description	Mech Avail %	Util Factor %	Annual Op Hrs	Annual Production 10^6 Units	Production Per Op Hr
Electric Shovel 21.4 m^3	80	85	5 712	6.4 BCM	1 120 BCM
Front End Loader 11.5 m^3	65	85	4 641	1.7 BCM	366 BCM
Hydr. Coal Loader	65	85	4 641	2.0 t	431 t
Electric Drill 310 mm	75	85	5 355	6.4 BCM	1 195 BCM
Haulage Truck 155 t	75	85	5 355	Varies	Varies
Track Dozer	70	85	4 998	-	-
Wheel Dozer	70	85	4 998	-	-
Grader	80	85	5 712	-	-
Scraper	65	85	1 083	-	-

Except for the scrapers, which are scheduled for a single shift per day, five days a week, the above performance data applies to a continuous operation with 8400 hours per year, consisting of 24 hours per day, 350 days per year.

4.5.3 Coal Processing

For the purposes of this assessment the coal processing methods developed in the Lossan Study are considered to be equally valid for the Moberly Prospect. A plant yield of 70% has been used in the Moberly Prospect assessment.

The coal preparation plant would be centrally located in the Moberly River Valley and incorporate the Baum Jig circuit for cleaning the raw coal. After drying, the product coal would be transported by conveyor to the loadout silos in the Pine River Valley.

4.5.4 Site Services and Infrastructure

The area is presently accessible by a route that runs north from the John Hart Highway at Fisher Creek. This road runs for 17 kilometres directly to the plant site area and would require upgrading for the development of the Moberly Area.

Power will be taken from the 230 kV line running south from the Bennett Dam, with a connection point located approximately 15 kilometres west of Moberly Lake. From this point the power will be supplied to the plant site by an overhead pole-line approximately 15 kilometres in length.

The coal loadout silos and the railroad loop will be located in the Pine River Valley and clean coal will be transported to the silos by a 15 kilometres overland conveyor.

The site services including water, sewer and power, will be similar to those required for the Lossan Mine, but site service building for the Moberly Prospect will be slightly smaller; a lower manpower and equipment requirement for the Moberly Prospect does not warrent as large a shop, warehouse and dry complex.

4.5.5 Capital Costs

The capital costs associated with mining the Moberly Prospect are summarized in Table 4.5.5 and for comparison with equivalent data in the Lossan Study, a similar format has been used here. The costs are based on the Lossan Study and have been modified where necessary to suit Moberly Prospect development. The more significant changes are outlined as follows:

1) Open Pit

Preproduction development in the Lossan Study was required to divert Brazion Creek which in turn provided initial low ratio coal release. The Moberly Prospect development does not include any preproduction mining because there is ample low ratio coal available at the commencement of operations and no other major excavations are required prior to the start of operations.

Mining equipment expenses are significantly less for the Moberly Prospect development than for the Lossan Mine; the strip ratio for the Moberly Prospect is much lower and a waste conveyor is not required.

2) Surface Plant and Services

The overland clean coal conveyor for the Moberly Prospect development is approximately 15 kilometres in length compared with 24 kilometres included in the Lossan Study. The capital for this item has been reduced accordingly but 1.0 million dollars has been added to construct a highway crossing.

The capital cost for the site buildings at the Moberly Prospect development, including shop, warehouse, and dry complex, has been reduced by 15%, because of the reduced equipment and manpower requirement.

The services capital cost is slightly reduced from the Lossan Study because the power distribution costs for the waste conveyor have been eliminated.

3) Infrastructure and Townsite

Although the access road to the Moberly Site is less than half of the distance to the Lossan Site, Moberly's construction costs are only slightly reduced; this work for the Moberly Prospect development would be more extensive.

The power supply cost for the Moberly Development is considerably less than for the Lossan Mine Area. About 15 kilometres of line has to be constructed to the Moberly Site compared with 40 kilometres to the Lossan Mine.

4) Engineering and Management Fees

Similar costs would be applicable for this item in both the Lossan and Moberly developments.

5) Contingency

The general contingency used in the Moberly assessment is 20% compared with 10% used in the Lossan Study. This higher contingency has been used to reflect the uncertainties still associated with the Moberly Prospect and to account for the "cost projection" technique in the Moberly assessment.

6) Camp and Construction Costs

Similar costs are estimated for the Moberly Prospect development as are found in the Lossan Study.

A schedule of capital expenditures, shown as Table 4.5.6, was developed for the cash low analyses.

TABLE 4.5.5

MOBERLY DEVELOPMENT
SUMMARY OF CAPITAL COSTS - 3.0 MM TONNES/YR.
(000's $)

Item	Description	Expenditures		
1	Open Pit	1983-1985	1986-2005	Total
	Preproduction Mining	-	-	-
	Mining Equipment-Initial	55 700	-	55 700
	- Replacement		68 100	68 100
	Waste Conveyor	-	-	-
	Sub Total	55 700	68 100	123 800
2	Surface Plant and Services			
	Coal Preparation Plant	48 500		48 500
	Overland Coal Conveyor	28 600		28 600
	Shops and Offices	13 700		13 700
	Services	4 200		4 200
	Sub Total	95 000		95 000
3	Infrastructure and Townsite			
	Access Road	5 300		5 300
	Power Supply	11 700		11 700
	Railroad	3 200		3 200
	Townsite	12 000		12 000
	Sub Total	32 200		32 200
4	Eng. and Management Fees	15 000		15 000
	Sub Total Item 1 to 4	197 900	68 100	266 000
5	Contingency			
	Mining Contingency	2 790	3 400	6 190
	General Contingency	25 440		25 440
	Sub Total	28 230	3 400	31 630
6	Camp and Construction Costs	15 300	700	16 000
	Total	**241 430**	**72 200**	**313 630**

TABLE 4.5.6
MOBERLY CAPITAL EXPENDITURE SCHEDULE
3.0 MM TONNES/YR. (10^6 DOLLARS)

Item	Description	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
1	Open Pit												
	Mining Equipment												
	-Initial (CL28)			55.7									
	- Replacement (CL10)						7.2		18.8	1.2	1.0	2.0	
	Sub Total			55.7			7.2		18.8	1.2	1.0	2.0	
2	Surface Plant and Services												
	Coal Preparation Plant	7.3	14.5	26.7									
	Overland Coal Conveyor		14.3	14.3									
	Shops and Offices		5.4	8.3									
	Services	2.1	1.5	0.6									
	Sub Total	9.4	35.7	49.9									
3	Infrastructure and Townsite												
	Access Road		1.3	4.0									
	Power Supply	7.9	1.9	1.9									
	Railroad			3.2									
	Townsite	4.0	4.0	4.0									
	Sub Total	11.9	7.2	13.1									
4	Engineering and Management Fees	3.0	6.0	6.0									
5	Camp and Construction	0.3	8.2	6.8	0.7								
	Sub Total Items 1 to 5	24.6	57.1	131.5	0.7		7.2		18.8	1.2	1.0	2.0	
6	Contingency												
	Mining 5% of Item 1			2.8			0.4		0.9	0.1	0.1	0.1	
	General 20% of Items 2 & 3	4.3	8.5	12.6									
	Sub Total	4.3	8.5	15.4			0.4		0.9	0.1	0.1	0.1	
	Total	**28.9**	**65.6**	**146.9**	**0.7**		**7.6**		**19.7**	**1.3**	**1.1**	**2.1**	

TABLE 4.5.6 (continued)
MOBERLY CAPITAL EXPENDITURE SCHEDULE
3.0 MM TONNES/YR. (10^6 DOLLARS)

Item	Description	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	TOTAL
1	Open Pit												
	Mining Equipment												
	-Initial (CL28)												55.7
	- Replacement (CL10)	20.5			2.0	3.0	10.4			2.8			68.1
	Sub Total	20.5			2.0	3.0	10.4			2.0			123.8
2	Surface Plant and Services												
	Coal Preparation Plant												48.5
	Overland Coal Conveyor												28.6
	Shops and Offices												13.7
	Services												4.2
	Sub Total												95.0
3	Infrastructure and Townsite												
	Access Road												5.3
	Power Supply												11.7
	Railroad												3.2
	Townsite												12.0
	Sub Total												32.2
4	Engineering and Management Fees												15.0
5	Camp and Construction												16.0
	Sub Total Items 1 to 5	20.5			2.0	3.0	10.4			2.0			282.0
6	Contingency												
	Mining 5% of Item 1	1.0			0.1	0.2	0.5						6.2
	General 20% of Items 2 & 3												25.4
	Sub Total	1.0			0.1	0.2	0.5						31.6
	Total	**21.5**			**2.1**	**3.2**	**10.9**			**2.0**			**313.6**

4.5.6 Operating Costs

The operating costs used in the Moberly Prospect assessment are based on the "Preliminary Feasibility Study - November 1982" of the Lossan Mine. Where necessary these costs have been modified to suit the Moberly development and are summarized on Table 4.5.7 which shows the annual operating costs used for each of the 5 year production periods.

TABLE 4.5.7
MOBERLY OPERATING COSTS (10^6 DOLLARS)
3.0 MM TONNES/YR.

	Annual Cost			
Description	Years 1-5	Years 6-10	Years 11-15	Years 16-20
Mining	52.15	65.55	75.67	77.47
Coal Preparation	9.30	9.30	9.30	9.30
Conveying	1.50	1.50	1.50	1.50
General Administration	8.10	8.10	8.10	8.10
Reclamation	0.30	0.30	0.30	1.00
Sub Total	71.43	84.75	94.87	97.37
Unit Cost/Clean Tonne	23.78	28.25	31.62	32.46
Rail	55.50	55.50	55.50	55.50
Port	11.10	11.10	11.10	11.10
Sub Total	66.60	66.60	66.60	66.60
Total	138.03	151.35	161.47	163.97
Unit Cost/Clean Tonne	46.01	50.45	53.82	54.66

The rail and port charges, coal preparation and reclamation costs are the same as those used in the Lossan Study.

Both the coal conveying and administrative costs used for Moberly are 10% less than the corresponding costs in the Lossan Study. The shorter distance from the Moberly plant site to the unit train loadout accounts for the lower conveying cost. The 10% reduction in the administrative costs can be attributed to a lower strip ratio at Moberly which reduces the total labour force.

The mining cost for the Moberly Area shows a substantial reduction from the Lossan Area. The reduced mining cost for the Moberly Prospect is directly related to the lower strip ratio at Moberly, 6.79:1 versus 10.24:1 for the Lossan Mine over a 20 year production period.

4.5.7 Finanacial Analysis

The financial analysis is based on capital costs, operating costs and the production schedule outlined previously in this section. Other assumptions have been made to allow the cash flows to be projected. These assumptions reflect the data used in the Lossan Study and are as follows:

a)	Coal price	-	$75 per tonne
b)	Taxes and Royalties	-	those in effect as of Nov. 1982
c)	Rail haulage	-	$18.50 per tonne
d)	Port charges	-	$3.70 per tonne
e)	Inflation	-	1983 - 11%
		-	1984 - 10%
		-	1985-1991 - 9%
		-	1992-1996 - 8%
		-	1997 & beyond 7%
f)	Financing	-	20% equity - 80% debt
		-	loan interest at inflation plus 6%
		-	15 year loan pay back period

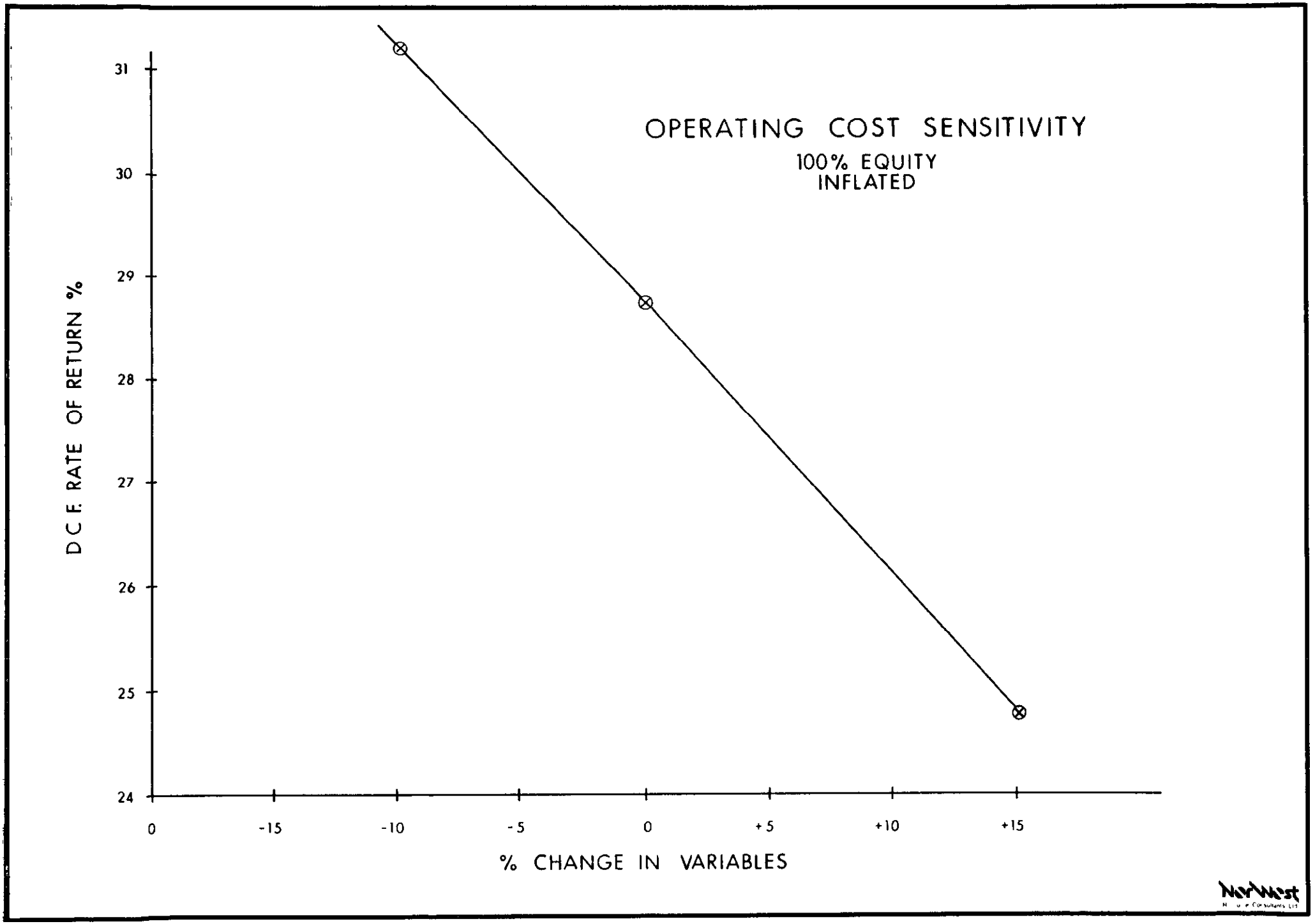
The "base case" in the financial analysis shows a 100% equity case with both costs and revenue escalated at the inflation rate. Operating cost sensitivity was tested with a -10% and +15% variance from the base case, excluding rail and port charges. Table 4.5.8 summarizes the results of the financial analysis and the attached graph illustrates the operating cost sensitivity.

TABLE 4.5.8
SUMMARY OF FINANCIAL ANALYSIS MOBERLY PROSPECT
100% EQUITY-ESCALATED
3.0 MM TONNES/YR.

	*Base Case	Operating Sensitivity	
		-10%	+15%
Description	$x10^6$	$x10^6$	$x10^6$
Gross Revenue	14346.8	14346.8	14346.8
Operating Cost	10038.7	9459.5	10907.8
Capital Costs	491.3	491.3	491.3
Federal Income Tax	958.5	1114.90	723.8
B.C. Provincial Tax	544.9	637.6	405.9
B.C. Provincial Mining Tax	440.8	514.7	329.4
B.C. Provincial Coal Royalty	353.5	353.5	353.5
B.C. Provincial Corp Capital Tax	8.3	8.3	8.3
Net Cash Flow	1510.7	1767.0	1126.7
D.C.F. Rate of Return	28.77%	31.21%	24.77%
Equity Pay Back Period	2.5 years	2.3 years	2.9 years

*Base Case reflects:
- 100% equity
- $75/tonne coal price
- inflated costs and revenue

Clearly the results of the financial analysis indicate that the Moberly development would be an attractive opportunity. The base case shows a 28.77% D.C.F. rate of return and a 2.5 year equity pay back period. Considering the 15% increase in the operating costs, which represents the worst condition tested, the D.C.F. rate of return is reduced to 24.77% and the equity pay back period is increased to 2.9 years.


OPERATING COST SENSITIVITY
100% EQUITY
INFLATED
D.C.F. RATE OF RETURN %
31
30
29
28
27
26
25
24
0
-15
-10
-5
0
+5
+10
+15
% CHANGE IN VARIABLES

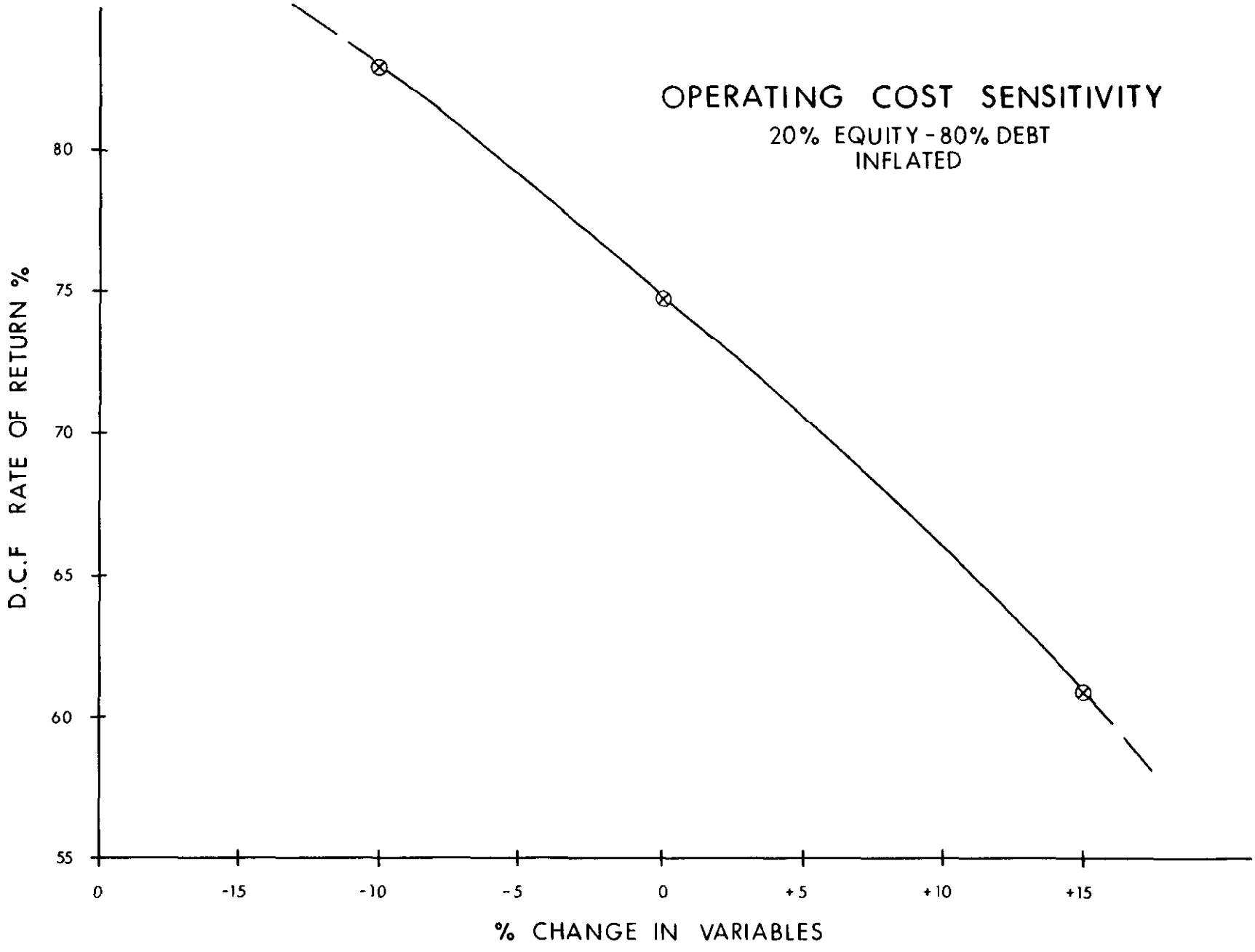
Similar cash flow analyses and sensitivity tests were performed on a 20% equity - 80% debt case. The results are summarized in Table 4.5.9 and the attached graph illustrates the operating sensitivity.

TABLE 4.5.9
SUMMARY OF FINANCIAL ANALYSIS MOBERLY PROSPECT
20% EQUITY 80% DEBT-ESCALATED
3.0 MM TONNES/YR.

	*Base Case	Operating Sensitivity	
		-10%	+15%
Description	$x10^6$	$x10^6$	$x10^6$
Gross Revenue	14346.8	14346.8	14346.8
Operating Cost	10038.7	9459.5	10907.8
Interest Expenses (less capitalized interest)	298.5	296.7	303.0
Capital Costs	528.1	528.1	528.1
Federal Income Tax	848.9	1001.1	619.9
B.C. Provincial Tax	489.5	583.5	348.1
B.C. Provincial Mining Tax	397.8	472.1	286.7
B.C. Provincial Coal Royalty	353.5	353.5	353.5
B.C. Provincial Corp Capital Tax	8.3	8.3	8.3
Net Cash Flow	1383.5	1644.0	991.4
D.C.F. Rate of Return	74.71%	82.98%	60.99
Equity Pay Back Period	1.1 years	0.9 years	1.4 years

*Base Case reflects:
- 20% equity - 80% debt
- $75/tonne coal price
- inflated costs and revenue

The results for the debt-equity case are even more attractive. This alternative case shows a 74.17% D.C.F. rate of return and a 1.1 year equity pay back period. A 15% increase in operating costs, excluding rail and port charges, reduces the D.C.F. rate of return to 60.99% and increases the pay back period to 1.4 years.


OPERATING COST SENSITIVITY
20% EQUITY - 80% DEBT
INFLATED
D.C.F RATE OF RETURN %
80
75
70
65
60
55
0
-15
-10
-5
0
+5
+10
+15
% CHANGE IN VARIABLES

5. GOODRICH SOUTH - TABLE PROSPECT

5.1 PROPERTY DESCRIPTION

The Table Prospect covers approximately 14 900 hectares or 29 coal licences and is located at the most eastern extension of the Goodrich Property. The following figure illustrates the location and geology of this prospect.

The Table Prospect is located immediately south of Brazion Creek and north of the Burnt River and is therefore about 1.5 kilometres distant from the Hasler Creek road to the Lossan Mine Area.

Terrain in this part of the Goodrich Coal Property is gentle with maximum elevations of 1370 metres and relief of 600 metres.

5.2 GEOLOGY

The major structure in the area is an undisturbed shallow-dipping box anticline that exposes a large area of coal-bearing Gething Formation sediments. During the 1982 field season a 10.74 metre thick seam was trenched in the upper part of the Gething Formation. Four more seams of at least 1.0 metre each were identified, bringing the total to at least five seams of mineable thickness in the Table Prospect.

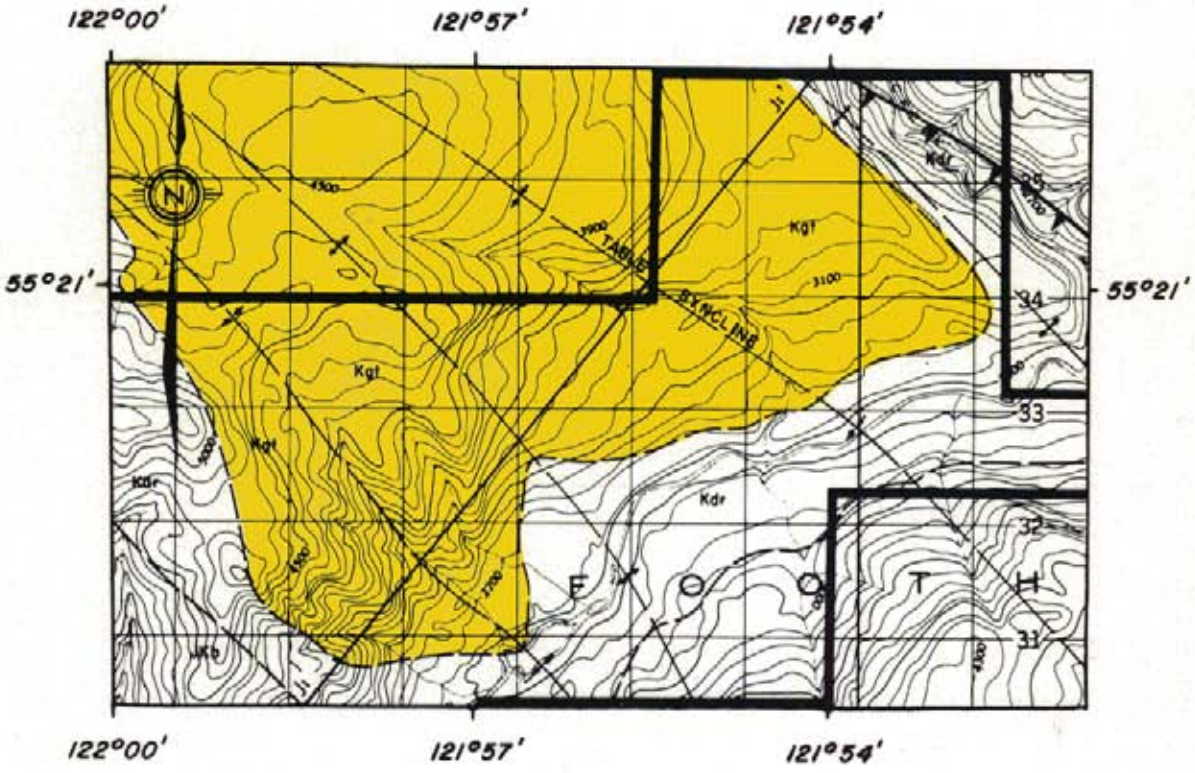
No drill hole data is available in this region but extrapolation from better known areas indicates a high possibility that more than these five seams may be present.

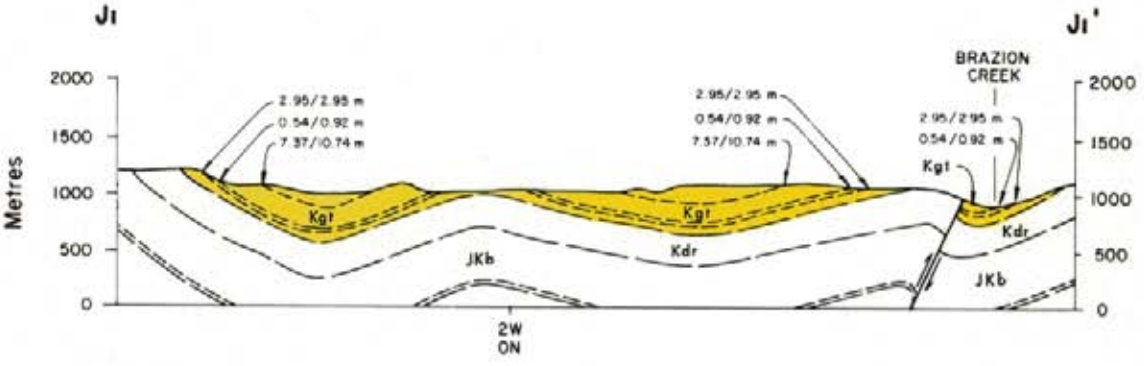
The folds in this area are northwesterly trending, and show a gentle southeast plunge. There are two major fold structures occurring in the Table Prospect. From west to east these are:

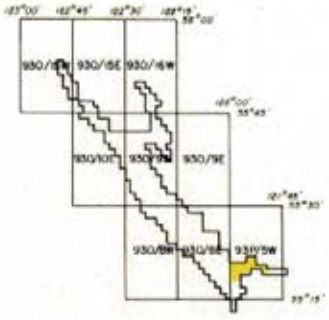
a) The Goodrich Anticline
b) The Table Syncline

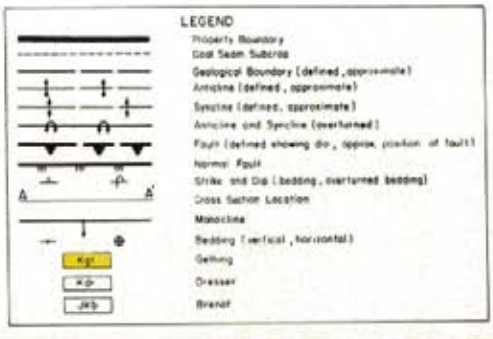
GOODRICH COAL PROPERTY

TABLE AREA PROSPECT









The Goodrich Anticline defines the southwest boundary of this map block. It is a tight, chevron fold, slightly overturned to the east in places, and appears to open towards the south. This anticline exposes older strata of the Beaudette Group in its core and coal-bearing Crassier Group on its limbs.

Numerous low amplitude folds occur between the Goodrich Anticline and the Table Syncline. These folds die out rapidly to the southeast.

The Table Syncline originates north of the Brazion Creek and extends southeast past the Burnt River. This syncline is the dominant feature of the geology of the area and is a broad open fold with shallow dipping relatively undisturbed limbs. The structure exposes a large area of coal-bearing Gething Formation sediments and has shallow dips ranging from 10^{o} to 15^{o}.

There are two major faults that extend into the Table Prospect. These are from west to east:

a) The Burnt Normal Fault
b) The East Thrust

The Burnt Normal Fault is a listric normal fault that occurs in the northwestern corner of the Table Prospect. It has approximately 150 metres of displacement, bringing Dresser Formation sediments, west of the fault, down relative to the Brenot Formation strata on the east side of the fault.

The East Thrust is located 8 kilometres east of the Goodrich Anticline. This thrust defines the eastern boundary of the area. Displacement is minor, ranging from 100 to 150 metres and the coal-bearing Crassier Group strata is repeated.

5.3 COAL OCCURRENCES

During the 1982 field season sixteen coal exposures were trenched in the Table Prospect, twelve were located in the Gething Formation, and four in the Brenot Formation. The most significant seam trenched was located in the upper part of the Gething Formation, exposed near the top of the shallow dipping Table

Ridge. This seam has a coal/coal plus rock interval of 7.37/10.74 m. At least four other seams of approximately 1.0 metre have also been identified in this area.

5.4 SURFACE MINEABLE RESOURCE BASE

The Goodrich South Table Area has a **total in place resource base** of **198 million tonnes.** Although the coal seam data is in a preliminary stage, a tonnage for a surface mineable resource base has been calculated.

The surface mineable resource base is conservative as only one seam has been included in this calculation. Consequently, the results of future exploration should have the potential to increase this tonnage to a significant extent. The **surface mineable resource base** for the Goodrich South Table Prospect is **49.9 million tonnes** at a **strip ratio of 4.06:1.** This resource base is contained within a seam that is believed to be the continutation, or a stratigraphic equivalent, of the Gething No. 1 Seam in the Lossan Mine Area.

Two surface mining blocks were identified for this prospect following a review of the geology. The limit of the blocks follows a projection of the crop line of the seam within the prospect area. Table 5.4.1 summarizes the surface mineable resource base calculation for this prospect area.

TABLE 5.4.1
GOODRICH SOUTH - TABLE PROSPECT
SUMMARY OF SURFACE MINEABLE RESOURCES

Block	Tonnes (Millions)	Strip Ratio
Z-1	29.6	3.47
X-1	20.3	4.92
Total	49.9	4.06

The geological conditions that apply to each block as shown on the geological cross-sections were treated as average. The length of the seam was measured

from the cross-section and the coal area determined by applying the total seam thickness obtained from the trench data. The applicable strike length was determined by the projection of the surface trace of the seam with appropriate consideration given to closure of the geologic structure. This strike length was applied to the cross-section coal area to determine the coal volume, and tonnages were calculated by applying a specific gravity value of 1.5. The specific gravity used is considered to be an acceptable approximation to the factor necessary to convert in place volumes to run-of-mine tonnes, allowing for the effects of mining loss and dilution. This value is close to the calculated value that was determined for the Lossan Mine.

The strip ratio was determined by measuring the appropriate mining area for each block, as seen on the cross-sections, and applying the strike length for each block to arrive at the total volume. The difference between the total and coal volumes gives the waste volume for each mining block. The strip ratio was calculated using this waste volume and dividing it by the raw coal tonnage. The total surface mineable tonnes and strip ratios for the Goodrich South Table Prospect were calculated from the results obtained from the separate blocks.

5.5 DEVELOPMENT CONCEPT

The Table Prospect provides a resource base that is adequate to support either an independent opreation or, due to its proximity to the Lossan Mine, a combined development of both areas.

a) The Table Prospect contributes 49.9 million raw tonnes to the combined resource base at a raw coal strip ratio of 4.06:1. This will support a 2.0 million clean tonne per annum production rate for close to 20 years.

b) The combined resource base of the Table Prospect and Lossan Mine is sufficient to support an operation of 5.0 million clean tonnes per annum for approximatey 20 years at a raw coal strip ratio of 7.85:1.

c) At a 3.0 million clean tonnes per year production level, the resource base of the Table Prospect and Lossan Mine combined will support a 32 year operation at the same 7.85:1 strip ratio.

d) A 20 year operation at the 3.0 million clean tonne production level can be conducted, within the combined areas, at a raw coal strip ratio of 6.52:1.

e) The major site facilities developed for the Lossan Mine can also service the Table Prospect.

f) The regional infrastructure for the Lossan Mine can be used for a combined Lossan-Table development.

The assessment of the Table Prospect considers a combined Table and Lossan development at 3.0 million tonnes per annum.

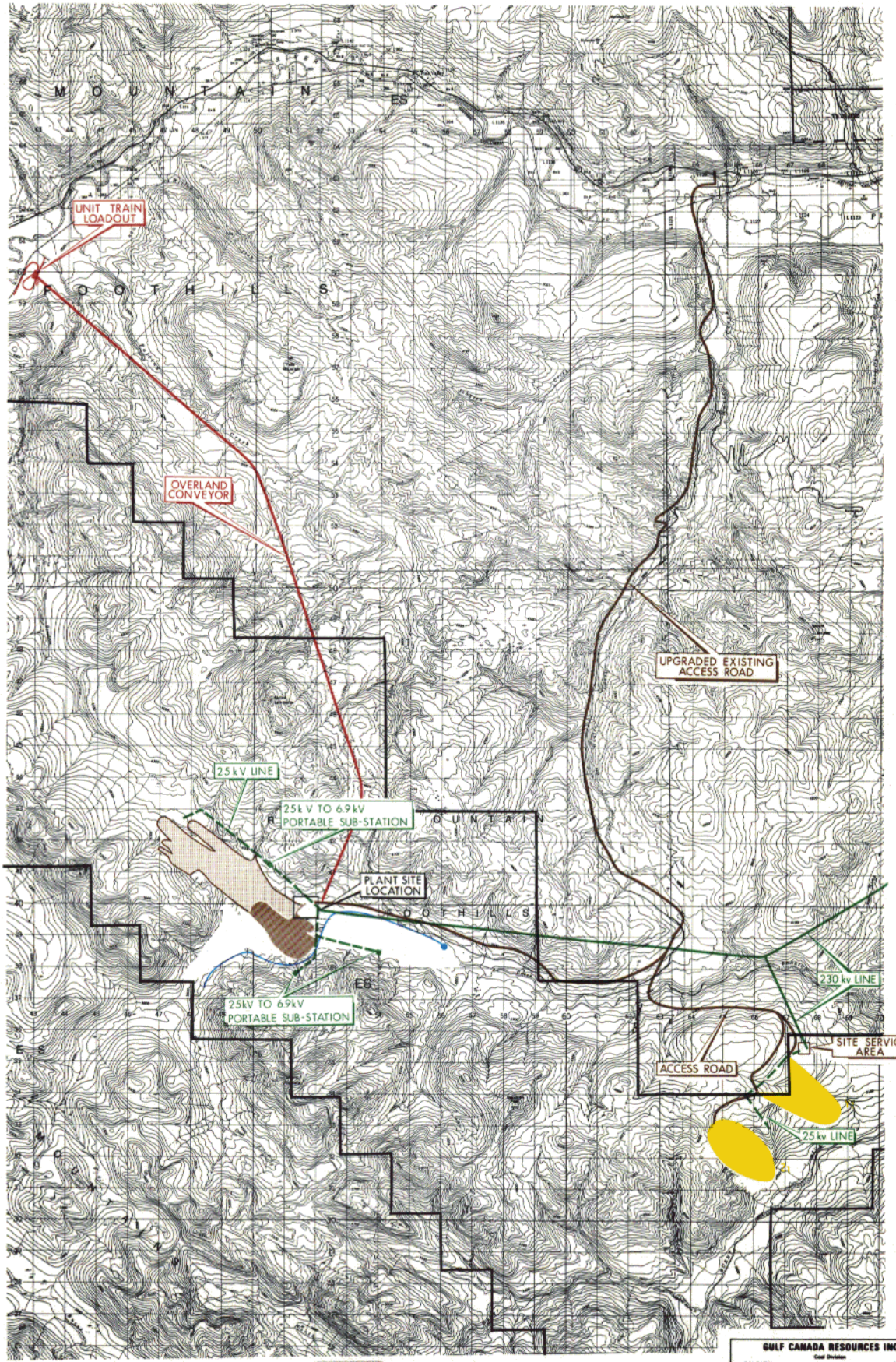
The figure on the following page shows the layout for the combined development of the Lossan Mine and the Table Prospect. This layout treats the Lossan Mine as the primary development with the Table Prospect providing support, in spite of the fact that the latter contributes the greater portion of the coal tonnage. Should subsequent work in the Table Prospect confirm or increase the existing low ratio resource base then it is likely that the site layout would be relocated, to favour mining activities in the Table Prospect.

5.5.1 General Approach

Except for changes in the mining concept and minor additional infrastructure requirements to specifically service the Table Prospect, the procedures and information outlined in the Lossan Study apply to this combined development concept. A resource base has been calculated in Section 5.4 for the Table Prospect and has been combined with sufficient reserves from the Lossan Mine. Capital and operating costs have been estimated for this concept using the information in the Lossan Study and a qualitative assessment of the combined Table-Lossan development has been made. A cash flow analysis has not been performed.

5.5.2 Mining

The coal and waste quantities for Blocks Z-1 and Y-1 in the Table Prospect along with the Lossan Mine reserves are shown in Table 5.5.1.



GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
GENERAL ARRANGEMENT
SITE AND FACILITIES
GOODRICH SOUTH (TABLE AREA),
LOSSAN DEVELOPMENT

PREPARED BY: T.E. SCALE BAR
APPROVED BY: T.E. DATE JAN. '83 DRAWING No.

TABLE 5.5.1

TABLE AND LOSSAN QUANTITIY SUMMARY

Location	Raw Coal (10^6 Tonnes)	Waste (10^6 BCM)	Strip Ratio
(A) Table Prospect			
Z-1	29.6	102.8	3.47
Y-1	20.3	99.9	4.92
Sub-Total	49.9	202.7	4.06
(B) Lossan Mine	79.5	813.7	10.24
Total	129.4	1016.4	7.85

The production schedule, shown as Table 5.5.2, was developed by combining the total quantities in the Table Prospect with the necessary amount of coal from Lossan at the average 10.24:1 strip ratio. A plant yield of 75% has been used for both areas to arrive at the raw coal quantities in the production schedule.

TABLE 5.5.2

TABLE AND LOSSAN PRODUCTION SCHEDULE

3.0 MM TONNES/YR.

Period	Raw Coal (10^6 Tonnes)			Waste (10^6 B.C.M.)			Combined Strip Ratio
	Table	Lossan	Total	Table	Lossan	Total	
Years 1 to 5	18.3	1.7	20.0	64.0	32.0	96.0	4.80
Years 6 to 10	16.4	3.6	20.0	64.0	64.0	128.0	6.40
Years 11 to 15	10.0	10.0	20.0	64.0	96.0	160.0	8.00
Years 16 to 20	5.2	14.8	20.0	10.7	126.5	137.2	6.86
Total	49.9	31.1	80.0	202.7	318.5	521.2	6.52

During the initial years, activity is concentrated in the Table Prospect to obtain low strip ratio coal production. Early work in the Lossan Mine is essentially in waste to prepare for production in later years. The combined development of the two areas shows the strip ratio peaking at 8.0:1 in the third 5 year period. This reflects the characteristic of the Lossan Mine operation where the ratio peaks at 14.5:1 in the second 5 year period. The addition of the Table Prospect coal has greatly reduced the peak strip ratio and deferred the lower peak (8.0:1) for a period of 5 years.

The mining method is a conventional truck/shovel operation and uses equipment similar to that outlined in the Lossan Study. The total equipment requirement will be reduced as a result of the lower strip ratio.

5.5.3 Site Services and Infrastructure

The combined development concept requires some additional items to service the Table Prospect. An access road 12 kilometres in length and a bridge across the Brazion Creek have to be constructed from the Hasler Creek road to the mine site. Power to the Table Prospect will be taken to the site by an overhead power line extending for 4 kilometres from the 230 kV feeder that will service the Lossan Mine. A second maintenance and office complex, complete with the necessary services, will be required for the Table development. However, the size of the individual buildings at each of the two areas will be smaller than the facility described for the Lossan development alone.

5.5.4 Financial Assessment

The capital cost for the combined Table and Lossan development is expected to be 32 million dollars less than the 418 million dollars that was estimated for the Lossan development alone. Additionally, a 41 million dollar expenditure for the conveyor system in the Lossan Mine can be deferred for 7 years. The capital expenditures for the combined development and the Lossan development by itself are compared under the following cost centres:

(1) Open Pit

- Minimal preproduction will be required for the combined development because there is ample low strip ratio coal in the Table Prospect.
- The equipment fleet will be considerably smaller for the combined mine development.
- The waste conveyor will be necessary for both cases but the installation can be deferred for about 7 years for the combined development.

The above items show a reduction in cost for the combined development amounting to approximately 42 million dollars plus a 7 year deferral of a 41 million dollar expenditure for the conveyor system.

(2) Surface Plant and Services

- The size of the maintenance complex at the Lossan Mine will be reduced and a second facility will be provided for the Table Prospect.
- The maintenance complex utilities would have to be duplicated for the Table Prospect and will likely be more expensive considering the site.

The above items would show a net increase of approximately 4 million dollars for the combined development.

(3) Infrastructure and Townsite

- A new access road 12 kilometres in length complete with a bridge across the Brazion Creek will have to be built to the Table Prospect.
- Power will have to be taken to the Table Prospect by an overhead line approximately 4 kilometres in length and a site distribution system will be installed.

The additional cost of the above items for the combined development is approximately 5 million dollars.

(4) Engineering and Management Fees

- No changes are anticipated in this cost item.

(5) Contingency

- Only a modest increase in the contingency is required for the combined development because most of the capital cost items are based on the engineered estimates in the Lossan Study.

The contingency for the combined development has been increased by 1 million dollars.

(6) Camp and Construction Costs

- No changes are anticipated in this cost item.

The operating costs for the combined development of the Table Prospect and Lossan Mine are expected to approximate the costs outlined for the Moberly Prospect because the strip ratios are almost the same. The average operating cost for the Lossan-Table development is estimated to be $30 per clean tonne, excluding rail and port charges.

The economics of the combined development will obviously be better than those shown in the Lossan Study because both the capital and operating costs are lower. Additionally, the 41 million dollar expenditure for the waste conveyor has been deferred for a 7 year period.

6. SOUTH CIRQUE PROSPECT

6.1 PROPERTY DESCRIPTION

The South Cirque Prospect lies within the Goodrich South mapping block. Geographically it is a glacial cirque bounded to the north by the southwesterly trending Goodrich Peak saddle and to the south by the North Burnt River. To the west the continuation of the Mt. Stephenson Ridge marks one geographical limit while the eastern edge is limited by the northwest trending Goodrich Peak Ridge. The resulting glacial basin has an areal extent of some 24 square kilometers. The following figure illustrates the location and geology of this prospect area within the Goodrich Property.

Topographically, the land slopes in a southerly direction towards the North Burnt River and drainage from the area flows in the same direction. The area is one of rugged terrain with maximum elevations of about 2000 metres and relief of 1100 metres.

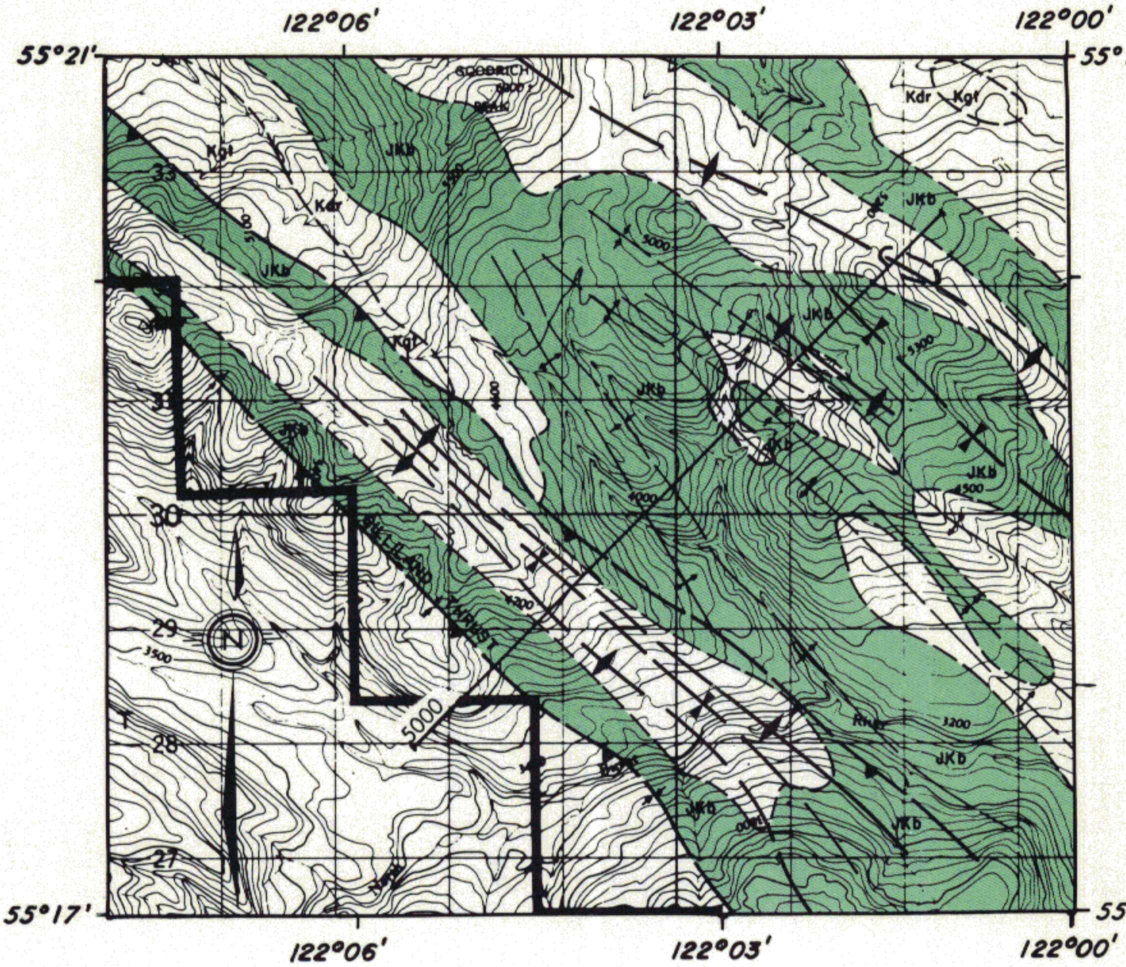
At the present time there is no surface access by road into this prospect area and the construction of about 12 kilometres of new road construction from an existing road on the west side of the Sukunka River would be required for mine development.

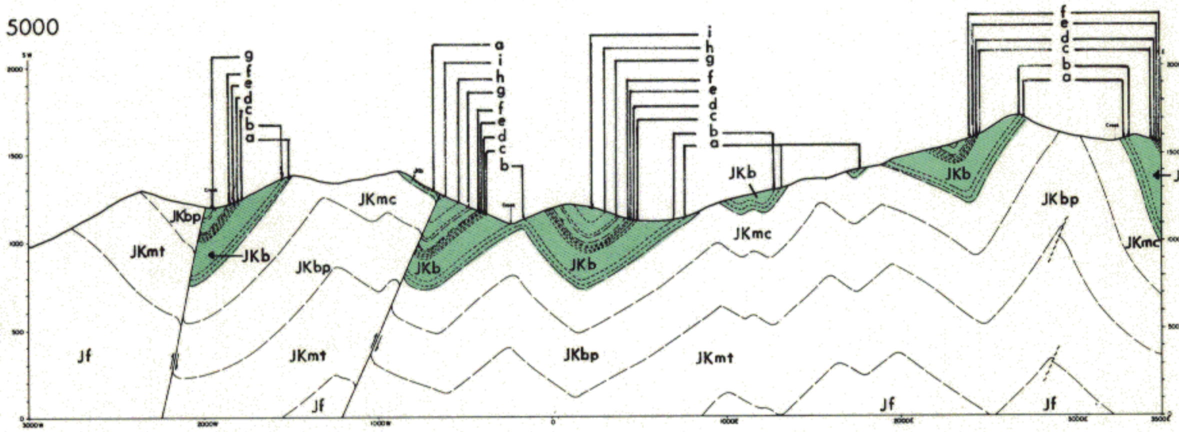
6.2 GEOLOGY

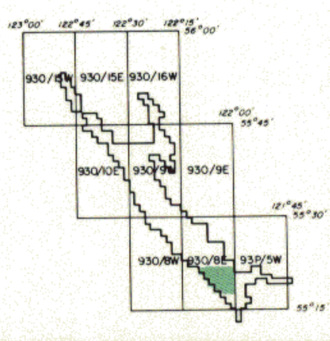
Geologically, this prospect area is contained within the Goodrich Synclinorium. Exposed strata within this portion of the synclinorium consist largely of the coal-bearing Brenot Formation and lesser occurrences of the Dresser, Gething and Monach Formations. The western boundary is marked by the major Stephenson Anticlinorium which brings the Monteith and Monach Formations to the surface. In an easterly direction, the synclinorium is bounded by the Goodrich Anticline, a major geological feature which exposes the Monach Formation.

GOODRICH COAL PROPERTY

SOUTH CIRQUE PROSPECT







SEAM THICKNESS	
a)	1.70 / 1.70 m
b)	1.58 / 1.60 m
c)	1.78 / 2.16 m
d)	3.16 / 3.60 m
e)	1.15 / 1.15 m
f)	1.34 / 1.34 m
g)	0.98 / 1.34 m
h)	0.97 / 0.97 m
i)	1.11 / 1.23 m

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- A A' Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Kgt Gething
- Kdr Dresser
- JKb Brenot

A total of 102 trenches have been excavated within the Goodrich South Cirque Prospect; 77 of these were within the Brenot Formation. Due to the prolific distribution of coal seams in the Brenot Formation in this prospect, further exploration, particularly drilling and mapping, is required in order to properly ascertain the true mining potential; it has been observed that the Brenot Formation on the Goodrich Property appears to thicken and contain more coal seams in a southerly direction.

As previously stated, the area consists of three major northwest-southeast trending folds. From west to east these are:

a) the Mt. Stephenson Anticlinorium;
b) the Goodrich Synclinorium; and
c) the Goodrich Peak Anticline

The Goodrich Synclinorium extends from north of the Goodrich Saddle to the North Burnt River in the south. This structure consists of several lesser parasitic folds of chevron-cuspate fold style. The parasitic folds are more pronounced at the southern end of the cirque with most dying out to the north near the Goodrich Saddle, in association with an apparent plunge reversal at that location. The plunge in the South Cirque Prospect increases from 0^{o} to 5^{o} in a southerly direction on the Goodrich Saddle to 10^{o} to 15^{o} near the North Burnt River. North of the saddle the plunge of the Goodrich Synclinorium has not been determined due to lack of exposure.

The last major fold, the Goodrich Peak Anticline, extends from north of Goodrich Peak south to the Burnt River.

Two major northwesterly trending thrust faults have been identified within the Goodrich South mapping block. They are, from west to east, the Gilliland Splay Thrust and the Burnt Thrust. Only the Burnt Thrust affects the Goodrich South Cirque Prospect placing lower to middle Brenot Formation strata on lower Gething and Dresser Formation sediments. This fault originates north of Mt. Stephenson and extends southeast to the North Burnt River.

No other evidence of faulting has been found in the area.

6.3 COAL OCCURRENCES

A total of 77 coal exposures have been located and trenched within the Brenot Formation in this area. These coal exposures range from 0.5 metres in thickness up to 3.16 metres of coal in a coal plus rock interval of 3.60 metres. In addition, twenty-five trenches were logged within the Gething Formation and one within the Dresser Formation.

The prospect contains at least 11 coal seams within the Brenot Formation with an aggregate true thickness of approximately 18 metres. The following table lists the individual seams and their thicknesses.

TABLE 6.3.1
SOUTH CIRQUE PROSPECT
COAL SEAM INDENTIFICATION

Formation	Coal Seam	Interval Coal/Coal + Rock	Trench Location No.
Gething	q	1.33/1.33	(GDR-GS-TRC-82032)
	p	1.24/1.24	(GDR-GS-TRC-82033)
Dresser	o	0.83/1.10	(GRT-#G13)
	n	1.34/1.48	(GDR-GS-TRC-82034)
	m	1.41/1.94	(GRT-#G3)
	l	1.12/1.12	(GRT-#B35)
Brenot	k	1.25/1.25	(GDR-GS-TRC-82018)
	*j	1.76/1.76	(GDR-GS-TRC-82017)
	*i	1.11/1.23	(GRT-#B30)
	*h	0.97/0.97	(GDR-GS-TRC-82019)
	*g	0.98/1.34	(GDR-GS-TRC-82021)
	*f	1.34/1.34	(GRT-#B18)
	*e	1.15/1.15	(GDR-GS-TRC-82022)
	*d	3.16/3.60	(GRT-#B16)
	*c	1.78/2.16	(GDR-GS-TRC-82023)
	*b	1.58/1.60	(GRT-#B3)
	*a	1.70/1.70	(GRT-#B5)

* Included in the resource calculation

6.4 SURFACE MINEABLE RESOURCE BASE

The **total in place coal resource base** for the Goodrich South Cirque Prospect is estimated to be **578 million tonnes.** Most of this tonnage is contained within seams of the Brenot Formation while about 60 million tonnes are contained in the Gething and Dresser Formation seams.

A **surface mineable coal resource base** has been calculated for this prospect giving it a total of **130.6 million tonnes** at a strip ratio of **8.13:1.** Like the Moberly Prospect the surface mineable resources are contained within 5 separate blocks. The following table is a summary of the surface mineable resources in the individual blocks.

TABLE 6.4.1
GOODRICH SOUTH CIRQUE PROSPECT
SUMMARY OF SURFACE MINEABLE RESOURCES

Block	Tonnes (Millions)	Strip Ratio
V-1	21.6	5.98
W-1	5.8	5.02
X-1	58.3	9.35
Y-1	24.2	7.41
Z-1	14.8	9.65
Z-2	5.9	6.10
Total	130.6	8.13

The surface mineable resource base was determined using the cross-section method following a review of the geology of the area. The five mining areas represent coal contained within separate geological structures and for each of which the practical development of a pit trending along strike can be considered. Topographic effects have been taken into account eliminating areas of mineable potential as they appear on the cross-sections but which lie too close to the North Burnt River. Allowance has also been made for the very steep slope found immediately south of the Goodrich Saddle.

The total thicknesses for the seams as determined by the Gulf geologists, was used in the calculation and all seams in excess of 1.0 metre thickness were included. The method of calculation involved the measurement of the length of each seam to surface outcrop or a proposed pit highwall and the application of the seam thickness to determine coal areas on the section. The appropriate length along strike was applied to give coal volumes and these values were converted to tonnages by the application of a specific gravity value. For the purpose of this calculation a specific gravity value of 1.6 and a mining recovery of 90% was applied. No allowance has been made for the effects of dilution. In terms of run-of-mine tonnage the mineable resource tonnage may be conservative when compared with the Lossan Study but consideration has also been given to the general lack of data for the area as a whole regarding

the geology and cleaning characteristics of the Brenot Formation seams. Consequently, it is felt that the applied factors provide an acceptable approximation to run-of-mine coal at present.

Strip ratios were determined by measuring the total volume in the proposed pits, deducting the coal volumes to arrive at a waste volume and then dividing the waste volume by the raw coal tonnage. The results are shown in Table 6.4.1.

6.5 DEVELOPMENT CONCEPT

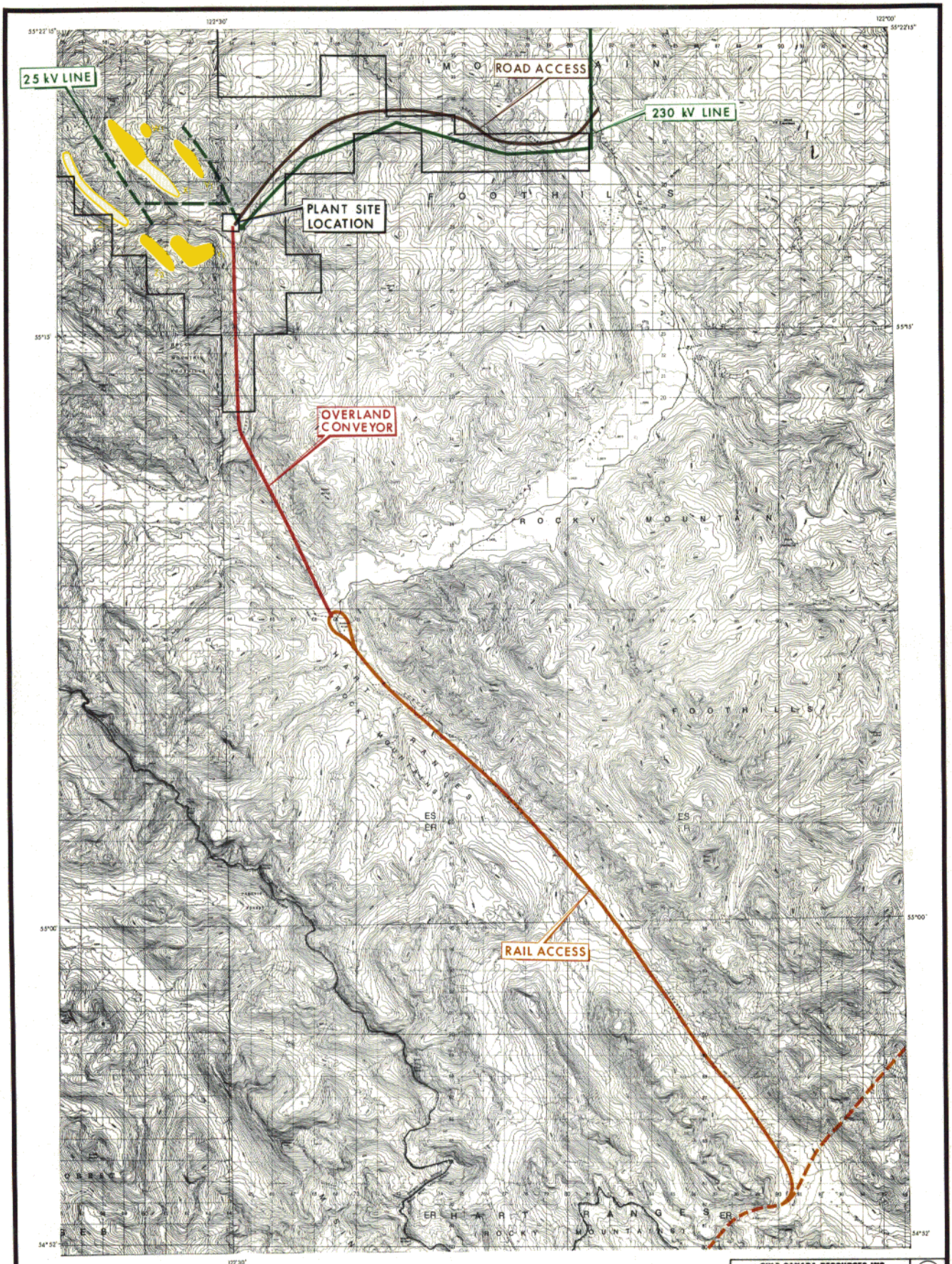
The South Cirque Prospect can be developed as an independent mining area like the Lossan Mine, the Moberly Prospect and the Table Prospect:

a) The resource base is adequate to support an annual production rate of 4.5 million clean tonnes for a 20 year period at a raw coal strip ratio of 8.13:1.
b) The resource base for a 3.0 million clean tonne production level supports a 30 year operation at the same 8.13:1 strip ratio.
c) A 20 year operation at the 3.0 million product tonne level can be conducted at an average raw coal strip ratio of 7.44:1.
d) A large portion of the regional infrastructure is in place and, due to other potential mines of other companies in the same area, some capital cost relief is possible for the installation of the remaining regional infrastructure requirements, for example the railroad could service the Sukunka Property.

The figure on the following page shows the general layout of the mine area and infrastructure, at the 3.0 million tonne production level.

6.5.1 General Approach

The South Cirque Prospect has been evaluated on the basis that it would form an independent production area. The resource base, as well as the method used to arrive at these tonnages is described in Section 6.4. Most of the other data necessary for the evaluation of this prospect was obtained from the Lossan Study. Using this information, capital and operating costs for



GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
GENERAL ARRANGEMENT
SITE AND FACILITIES
SOUTH CIRQUE PROSPECT

DRAWN BY:	T.E.	SCALE	BAR
APPROVED BY:	T.E.	DATE: JAN. '83	DRAWING No.

the South Cirque Prospect were estimated; however, cash flow analyses have not been done. The development potential of the South Cirque Prospect was then assessed in a qualitative manner by comparing the pertinent costs with those of the Lossan Study and the Moberly Prospect evaluation, both of which include cash flow analyses.

6.5.2 Mining

The coal and waste quantities developed for the surface mineable resource base for the South Cirque Prospect are summarized in Table 6.5.1.

TABLE 6.5.1
SOUTH CIRQUE RESOURCE SUMMARY

	Raw Coal (10^6 tonnes)		Waste (10^6 BCM)		Strip Ratio	
Location	Area	Cum.	Area	Cum.	Area	Cum
W-1	5.8	5.8	29.1	29.1	5.02	5.02
V-1	21.6	27.4	129.1	158.2	5.98	5.77
Z-2	5.9	33.3	36.0	194.2	6.10	5.83
Y-1	24.2	57.5	179.4	373.6	7.41	6.50
X-1	58.3	115.8	545.2	918.8	9.35	7.93
Z-1	14.8	130.6	142.8	1061.6	9.65	8.13
Total	130.6		1061.6			8.13

The surface mineable areas identified in Table 6.5.1 can be considered to be independent pits, and are tabulated to represent the sequence of mining. The cumulative coal and waste quantities from Table 6.5.1 are plotted to provide a coal release graph, shown on the following figure, for the South Cirque Prospect and since the graph is representative of the mining sequence it was used to develop the production schedule which is presented in Table 6.5.2. A plant yield of 70% has been used to determine raw coal quantities in the production schedule.

COAL RELEASE GRAPH
SOUTH CIRQUE DEVELOPMENT

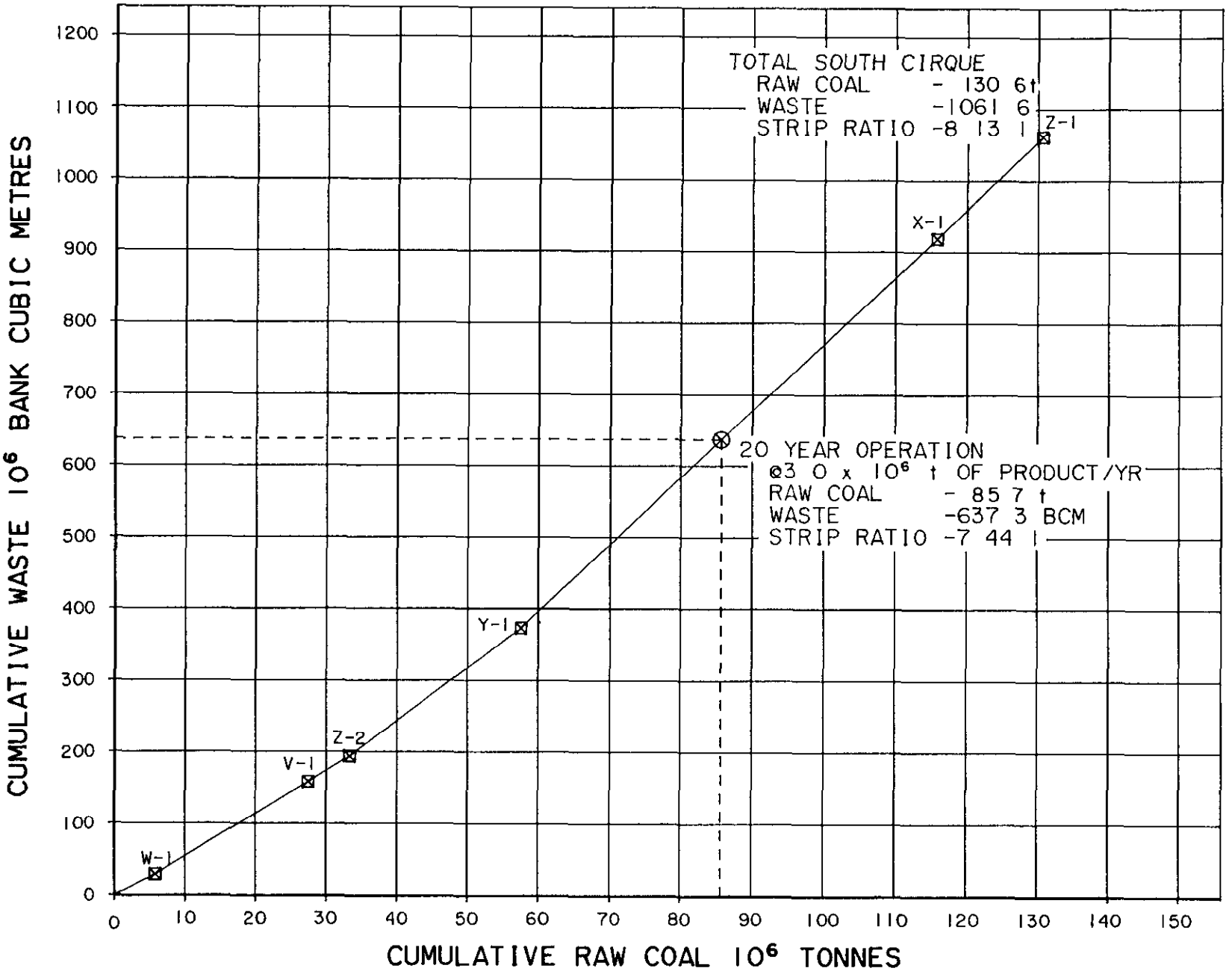


TABLE 6.5.2
SOUTH CIRQUE PRODUCTION SCHEDULE
3.0 MM TONNES/YR.

Period	Raw Coal (10^6 Tonnes)	Waste (10^6 BCM)	Strip Ratio
Years 1-5	21.425	122.5	5.72
Years 6-10	21.425	142.5	6.65
Years 11-15	21.425	172.0	8.03
Years 16-20	21.425	200.3	9.35
Total	85.7	637.3	7.44

The total mining area of the South Cirque Prospect is divided into 6 separate mining blocks that lie to the north and south of the North Burnt River; pits W-1, V-1, X-1 and Z-1 are located north of the river while pits Z-2 and Y-1 are located south of the river. Except for the initial 5 year period and a portion of the last 5 year period when mining activity is limited to the north side of the river, operations have to be conducted on both sides of the North Burnt River. This requires a well planned design to provide access to mining areas and to establish an efficient means of waste movement on both sides of the river. The relief of the South Cirque Prospect which is greater than that found on the other prospect areas further emphasizes the necessity for careful, detailed planning for an efficient operation.

A conventional truck/shovel mining method can be used for the South Cirque Prospect. The pits are all of adequate size to allow the use of large mining equipment, similar to that outlined in the Lossan Study. The total equipment requirement will be somewhat less than that shown for the Lossan Study but the fleet will be larger than that of the Moberly Prospect or the Lossan-Table development.

The South Cirque Prospect is attractive considering the 7.44:1 strip ratio, but the mining is more demanding than at the Moberly or Table Prospects.

6.5.3 Site Services and Infrastructure

The South Cirque Prospect infrastructure requirements will be integrated with the systems currently being developed for the Quintette and Bullmoose Mines.

The rail access to the South Cirque Prospect will branch off the Anzac line in the vicinity of Hook Lake and run north along the Sukunka River Valley for 35 kilometres to the loadout site. This route could service other potential producers in the area and, except for the loadout loop, is expected to be constructed by the British Columbia Railway in accordance with the B.C. Government's present policy.

Power will be brought to the mine site by a 230 kV overhead line, 40 kilometres in length, from the line to Tumbler Ridge. This line would, in part, follow the Burnt River Valley to the plant site area.

Road access to the property would be constructed using the well established network in the Sukunka River Valley and would service the property via the Burnt River Valley. Chetwynd would still serve to house the mine personnel.

The site facilities would be similar to those shown in the Lossan Study. The warehouse-shop-office complex would be somewhat smaller to reflect the reduced manpower and equipment as a result of the lower strip ratio. The overland coal conveyor from the plant site to the loadout loop at the Sukunka River Valley is 21 kilometres in length and is therefore slightly shorter than the 24 kilometres length of the Lossan Study.

6.5.4 Financial Assessment

The capital cost for the South Cirque Prospect development is expected to be 32 million dollars less than the 418 million dollars estimated for the Lossan development. It has been assumed that the 35 kilometres of rail line extending to the loadout site would be financed by the British Columbia Provincial

Government and the cost of this work has not been included. The capital expenditures for the South Cirque and Lossan development are compared under the following headings:

(1) Open Pit

- Slightly more preproduction work will be required at South Cirque reflecting a substantial amount of site road construction.
- The South Cirque equipment fleet will be smaller.
- A waste conveyor will not be required at South Cirque.

Combined, the above items show a reduction in the capital cost, compared with Lossan, amounting to approximately 60 million dollars.

(2) Surface Plant and Facilities

- The portion of the coal conveyor running in the Burnt River Valley is expected to have to be covered. The conveyor route is also a more difficult one than the Lossan route.

It is estimated that this item will add about 1 million dollars.

(3) Infrastructure and Townsite

- Approximately 20 kilometres of new access road at South Cirque will have to be constructed and additionally 20 kilometres will have to be upgraded to connect the plant site area with the road to Chetwynd.
- A 40 kilometres overhead power line will have to be constructed to the South Cirque site from the line leading to Tumbler Ridge. Power distribution on the property will have to service both sides of the North Burnt River.

These items will add approximately 11 million dollars to similar capital cost items shown in the Lossan Study.

(4) Engineering and Management Fees

- No changes are anticipated in this cost item.

(5) Contingency

- A 20% contingency is used for items (2) plus (3) above.

This adds 16 million dollars to the capital costs.

(6) Camp and Construction Costs

- Similar costs are expected for this item as compared with the Lossan Study.

The operating costs for the South Cirque Prospect are expected to be slightly higher than those shown for the Moberly Prospect. Firstly, the strip ratio is slightly higher, secondly the topography within the mining areas is more rugged and thirdly the multi-seam geological setting reduces the efficiency of the mining system. The average operating cost for the South Cirque development is estimated to be $34 per clean tonne, excluding rail and port charges.

The economics of the South Cirque development are expected to be somewhat better than those shown in the Lossan Study because the capital and operating costs are lower. However, the South Cirque development will likely not be as attractive as the Moberly or the combined Lossan-Table developments because of higher capital and operating costs.

7. HASLER CREEK PROSPECT

7.1 PROPERTY DESCRIPTION

The Hasler Creek Prospect lies on the eastern edge of the Goodrich East coal licences 8 kilometres east of the Lossan Mine Area. Its approximate geographical boundaries are the Falling Creek Anticline to the west, Hasler Creek to the east, Brazion Creek to the south and Falling Timber Creek to the north. The following figure illustrates the location and geology of this prospect.

Access to the Hasler Creek Prospect is gained via the Hasler Creek Road which the latter crosses at a point about 29 kilometres from the junction with the John Hart Highway. The terrain is relatively gentle in this part of the Goodrich Property with a maximum elevation of 1674 metres and relief of 600 metres.

7.2 GEOLOGY

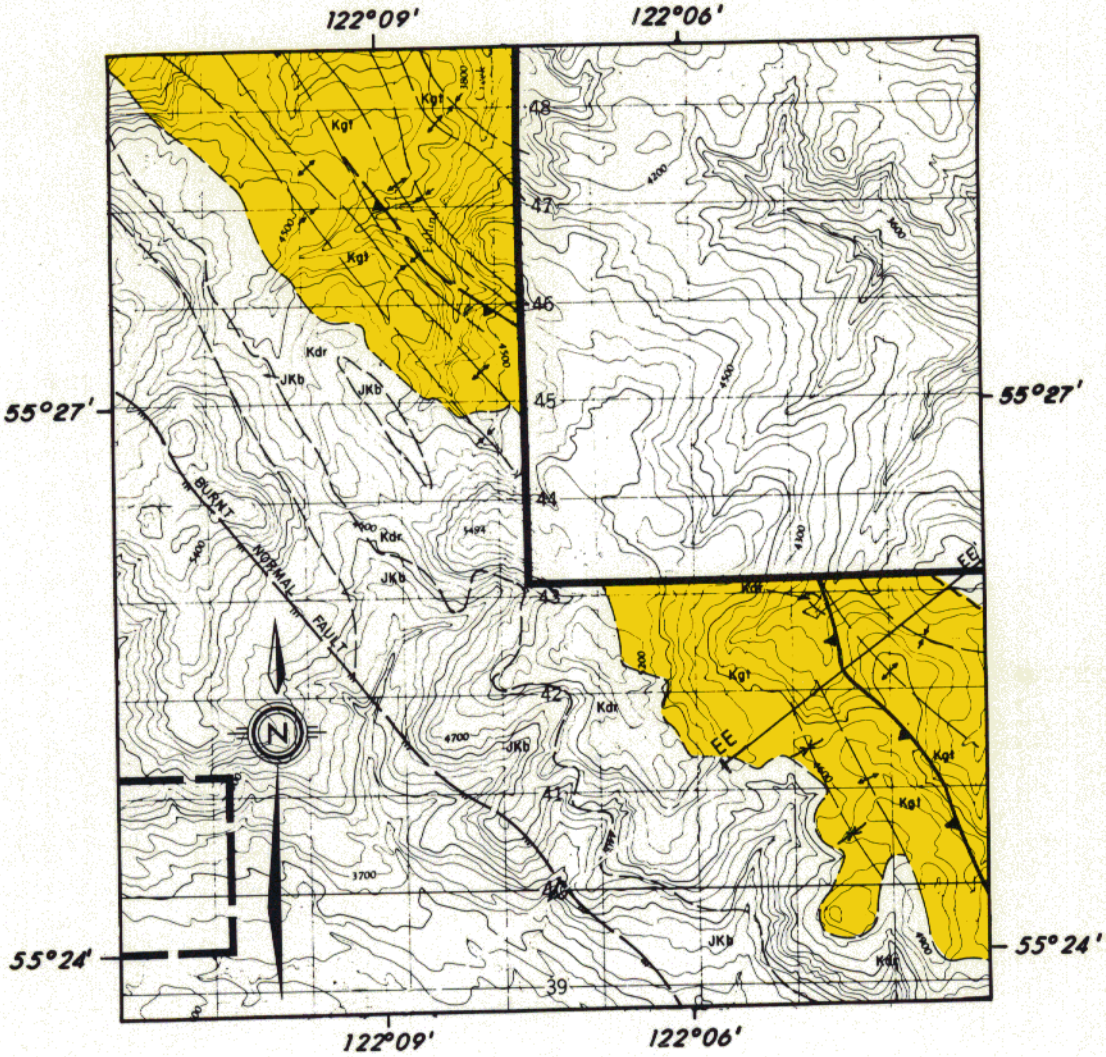
Stratigraphically, the area consists mainly of the Gething and Dresser Formations with some Brenot Formation exposures in the Brazion Creek Valley. The Dresser Formation is largely confined to the western and southern edges of the prospect. Most of the central and eastern exposures are of the Gething Formation. It should be noted that the very eastern edge of the prospect area may contain a complete or nearly complete section of Gething Formation.

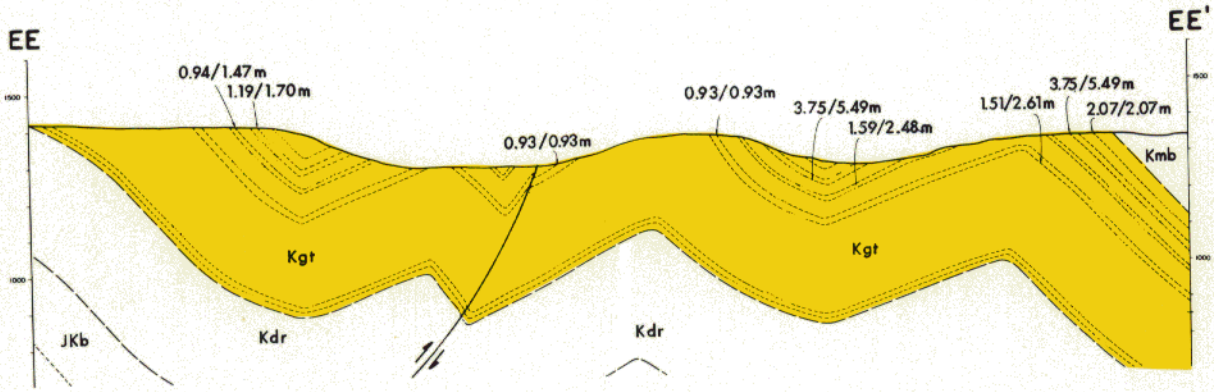
Structurally the area is affected by the easterly dipping limb of the Falling Creek Anticline. In addition, several lesser folds exist following a northwest - southeast trend.

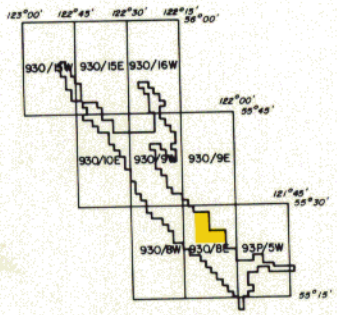
The Falling Creek Anticline begins northeast of Mt. LeHudette and follows the regional trend from northwest to southeast. The anticline is contained largely within exposures of the Dresser and Brenot Formations.

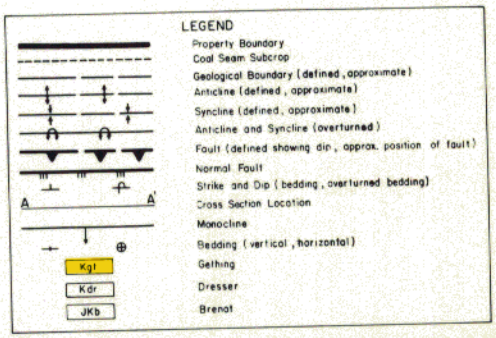
GOODRICH COAL PROPERTY

HASLER CREEK PROSPECT









Additional folds are numerous and of a subsidiary nature. These lesser folds occur mainly in exposures of the Gething Formation and are often of a cuspate style. Regionally, the plunge is shallow to the northwest and the dip of the strata averages between 24^{o} and 30^{o}.

Only one thrust of any sizeable displacement is believed to exist within this prospect. The Boundary Thrust, which has a displacement of 30 to 50 metres, repeats, in part, the Gething Formation section. Smaller faults are present throughout the area.

7.3 COAL OCCURRENCES AND RESOURCES

Coal seams within the Hasler Creek area range from 0.24 metres to 5.49 metres in true thickness and most of these seams have been found within the Gething Formation. A few seams, however, have been found in the Dresser and Brenot sequences. A total of 14 trenches have been excavated in seams in the Hasler Creek Prospect and coal to coal plus rock intervals of up to 3.75/5.49 metres have been found.

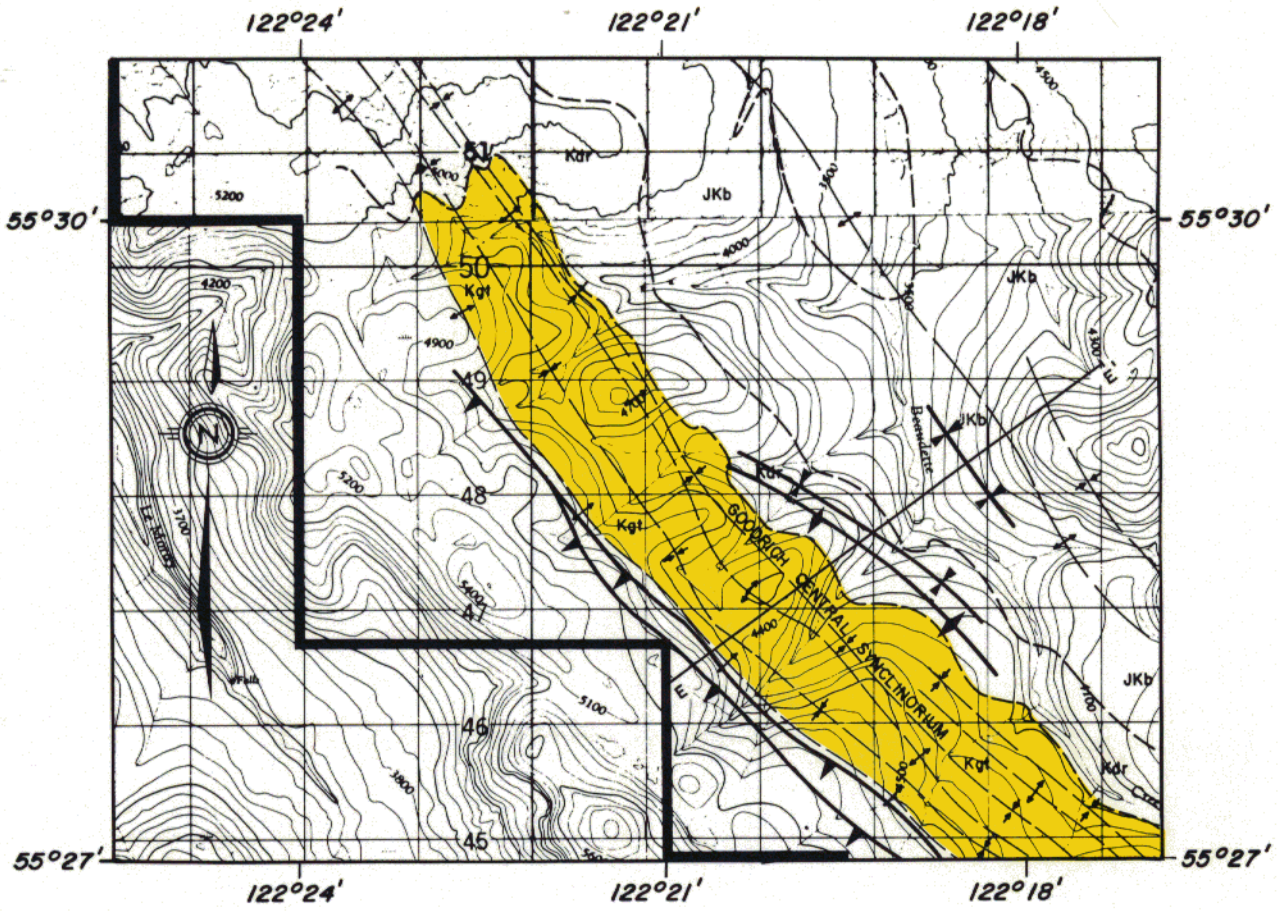
The in-place coal resources have been calculated to be 210 million tonnes in the Gething Formation and a conservative 61 million tonnes in the Brenot Formation. The potential to have greatly increased resources at acceptable strip ratios exists if the coal-bearing strata in the nearby South Cirque Prospect extend into the Hasler Creek Prospect.

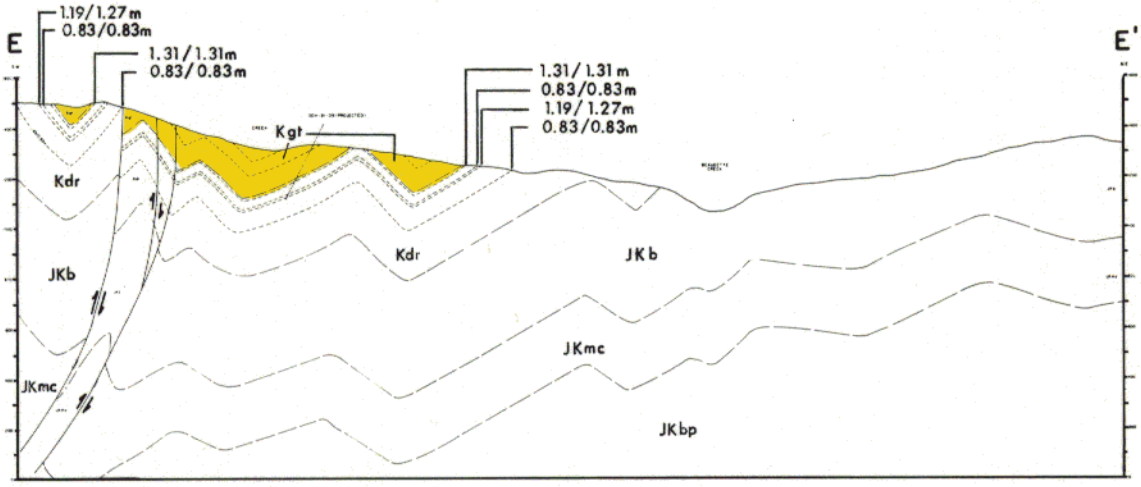
7.4 MINING POTENTIAL

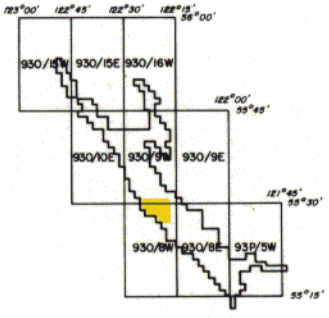
No attempt has been made here to determine the portion of the coal resource that would be available for surface mining at low stripping ratios due to the preliminary nature of the geology. However, it should be noted that the resistant sandstone beds of this portion of the property are well exposed and clearly demonstrate the pseudo dip-slope nature of the structure. Consequently surface mining should be a practical system for this prospect.

GOODRICH COAL PROPERTY

GOODRICH CENTRAL SOUTH PROSPECT





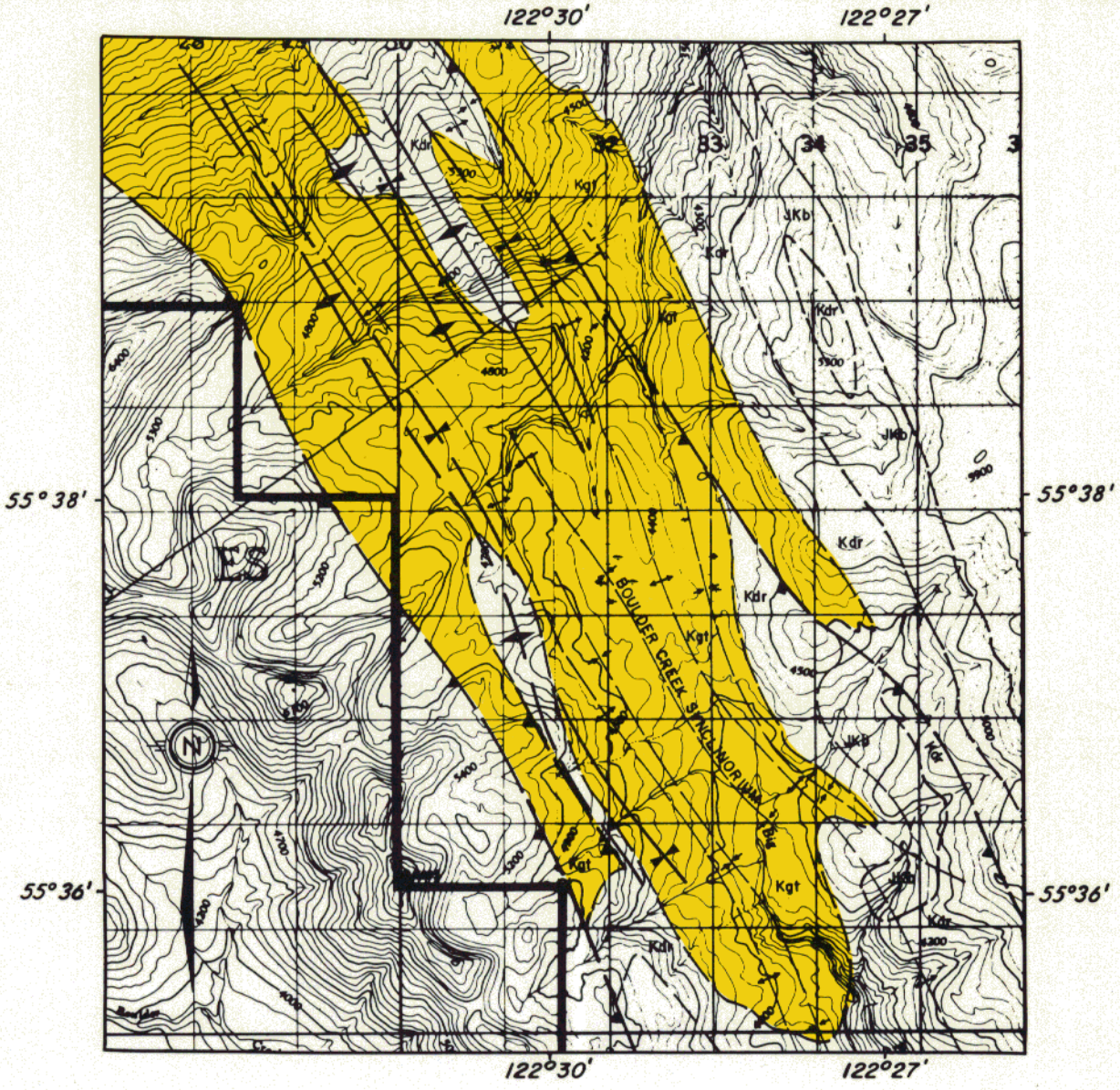


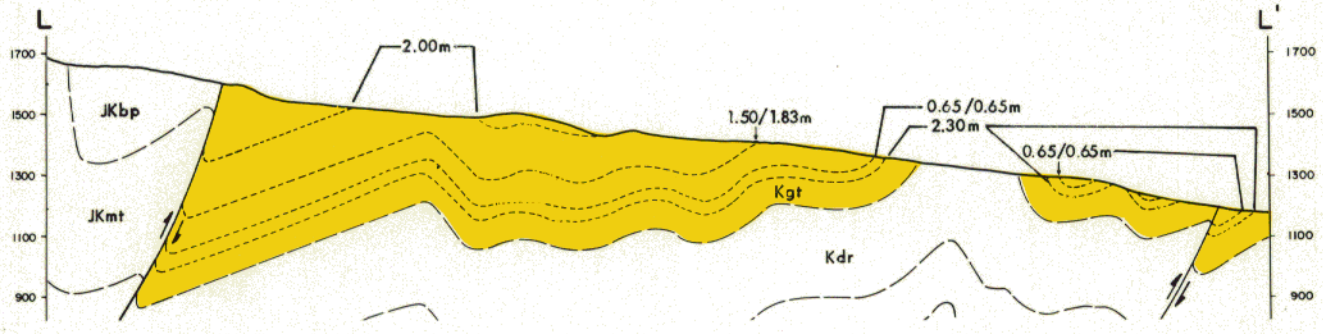
LEGEND

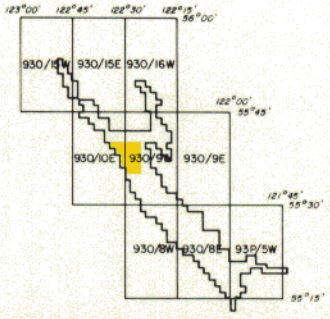
- Property Boundary
- Coal Seam Subcrop
- Geological Boundary (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Kgt — Gething
- Kdr — Dresser
- JKb — Brenot

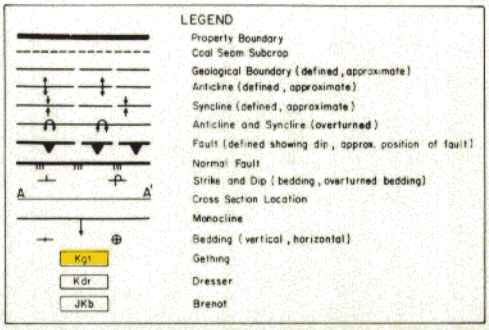
GOODRICH COAL PROPERTY

GOODRICH CENTRAL NORTH PROSPECT









If the potential for production from mines in this prospect proves to be too low to support independent development, coal mined here could easily supplement those volumes from the Lossan Mine because of the close proximity of the Hasler Creek Prospect to the Lossan Area. In any case the development of a mine in the Hasler Creek Prospect would be easily facilitated as the site infrastructure for the Lossan Mine could be utilized.

8. GOODRICH CENTRAL PROSPECTS

8.1 PROPERTY DESCRIPTION

The Goodrich Central Block is the largest on the Goodrich Property covering approximately 29,000 hectares. This block, which straddles the John Hart Highway, extends from the Moberly River at the north end in a southerly direction to the Lossan Mine Area and from Mt. Bickford in the east to Le Moray and Little Boulder Creeks in the west.

The Goodrich Central South and North Prospects are separated by the Pine River Valley. The synclinoria located south and north of the valley hold significant coal potential in the Gething and Dresser Formations. The Lossan Mine Area is located along the same trend only a few kilometres to the south of the Goodrich Central South Prospect. The following two figures illustrate the location and geology of the Goodrich Central South and North Prospects respectively.

The area covered by the Goodrich Central Block is heavily covered by dense vegetation and contains limited surface exposure. Further exploration in the block will almost certainly increase the coal resources and potential for coal development within these prospects.

8.2 GEOLOGY

Structures in the Goodrich Central Block are north-westerly trending, exposing strata from the Jurassic Fernie Formation to the Lower Cretaceous Gething Formation. The block is bisected by the Boulder Arch, which is a region of pronounced plunge reversal in the northwesterly trending Boulder Anticline. The arch occurs at the Pine River Valley; those structures to the north plunge northwest while those to the south are generally southeast plunging. Folds are predominantly symmetrical and chevron in style, more strongly appressed towards the west where they exhibit decollement features and associated drag folding.

The Goodrich Central Block, divided into two areas separated by the John Hart Highway, includes five major fold structures on the north side of the highway. From west to east these are:

a) the Moberly Anticline;
b) the Boulder Creek Synclinorium;
c) the Big Boulder Anticline;
d) the Coyote Syncline and,
e) the Bickford Anticline.

The Moberly Anticline which extends from the Whiterabbit Area to the Pine River Valley in the south exposes older Beaudette Group strata at its core.

The major structure of economic interest in this prospect, north of the highway, is the Boulder Creek Synclinorium which plunges shallowly to the northwest from the arch at the Pine River Valley. The synclinorium is approximately 3 kilometres wide and provides exposures of coal-bearing strata of the Crassier Group.

The Big Boulder Anticline extends north and south of the Pine River Valley, exposing Beaudette and lower Crassier Group strata. This anticline decreases in amplitude northward and terminates at the Beaudette Thrust west of Mt. Bickford. The Coyote Syncline (Hughes, 1967) trends north producing exposures of the Dresser Formation and the lower portion of the Gething Formation. The Bickford Anticline, which occurs at the boundary of the Goodrich Central and Moberly Prospects, passes through Mt. Bickford. This anticline has exposures of older Beaudette Group strata at its core.

South of the highway, there are three major fold structures. These are from west to east:

a) the Goodrich Central Synclinorium
b) the Big Boulder Anticline; and
c) the LeHudette Monocline

The major structure of economic interest in the Goodrich Central Block, south of the highway, is the Goodrich Central Synclinorium which extends from the Pine River Valley to the Lossan Mine. The synclinorium is approximately 2 kilometres in width, and causes exposure of the Gething Formation approximately 5 kilometres south of the Pine River Valley as it plunges shallowly to the southeast.

The Big Boulder Anticline causes Beaudette Group and strata of the lower part of the Crassier Group to be exposed along its trend from north of the highway south towards the Lossan Mine.

The southwest dipping LeHudette Monocline extends along the eastern part of of Goodrich Central Block, south of the highway giving exposures of Beaudette Group sediments. This structure is thought to be the southern extension of the western limb of the Bickford Anticline which lies north of the Pine River Valley.

There are four major faults within the strata of the Goodrich Central Block. From west to east these are:

a) the Little Boulder Thrust
b) the Pyramis Thrust
c) the Beaudette Thrust
d) the LeHudette Thrust

The faults are generally northwesterly trending with steep southwest dips. The Little Boulder Thrust trends along the western part of the Goodrich Central Block, north of the highway. This fault lies predominantly within exposures of the Monteith Formation and is interpreted to have a displacement of approximately 300 metres.

The Pyramis Thrust is a major fault that extends from the Whiterabbit Area in the north to near Mt. Stephenson in the south. North of the Pine River Valley the Pyramis Thrust has an associated splay fault and the combined displacement is over 700 metres. Along its trend, the fault places older Beaudette Group strata over younger Crassier Group strata.

The Beaudette Thrust lies approximately 3 kilometres to the east of the Pyramis Thrust. The former fault is first seen south of the Moberly River, and trends in a southerly direction to a location near the headwaters of Beaudette Creek where the displacement becomes negligible. The thrust fault occurs mainly in outcrops of the Crassier Group strata in the north and in Beaudette to Crassier Group strata in the south. The maximum displacement along this fault is 300 metres.

The LeHudette Thrust trends along the eastern boundary of the Goodrich Central Block and has a minimal effect on the geology of the area. This fault is considered to be the southward extension of an axial plane fault that developed in the Bickford Anticline. The thrust fault places Fernie and Monteith Formation strata over Monach Formation strata and has a maximum displacement of 550 metres.

8.3 COAL OCCURRENCES AND RESOURCES

Trench data, combined with information from drill holes GDR-DDH-80-31 and GDR-DDH-80-35, indicate the presence of at least four seams in the Gething Formation, north of the John Hart Highway. These seams have an aggregate mineable thickness of at least 8 metres and are summarized in the following table:

TABLE 8.3.1
GOODRICH CENTRAL NORTH
SUMMARY OF COAL SEAM DATA

Data Source	Interval of Coal/Coal Plus Rock (m)
GDR-GC-TRC-82012	2.65/2.65
GDR-GC-TRC-82011	0.60/0.60
DGR-DDH-80-31	0.73/1.27
GDR-DDH-80-31	2.29/3.50

South of the highway on the Goodrich Central Block, at least three coal seams exist in the Gething Formation, and they have an aggregate mineable thickness of about 7.5 metres. Outcrop exposures are limited but the potential for increased coal resources exists within the Goodrich Central and Boulder Creek synclinoriums. Trenches south of the highway on the Goodrich Central Block have coal/coal plus rock values ranging up to 2.09/3.65 metres in the Gething Formation and up to 3.08/3.81 metres in the Dresser Formation, giving an aggregate mineable thickness from both formations of 15 to 16 metres.

Current in-place coal resources have been calculated to be 169 million tonnes in the North Prospect and 87 million tonnes in the South Prospect.

Potential exists for greatly increased resources in the Gething Formation as current evaluatons of better studied areas, such as the Lossan Mine and the Moberly Prospect, indicate that the Gething Formation contains between 7 and 11 coal seams.

Preliminary estimates indicate that 33 to 40 million tonnes of coal are contained in the Goodrich Central South and North Prospects at strip ratios of 10 to 1 or less.

8.4 MINING POTENTIAL

This prospect is geologically perhaps the least understood of all the prospects on the Goodrich Property, as a result of the limited amount of outcrop. Consequently, no attempt has been made to define surface mining areas. Nevertheless, the results of exploration of the Gething Formation in the Lossan Mine Area, combined with the large areal distribution of the Brenot Formation in the Goodrich Central Prospect, indicate that large areas of surface mineable coal should be found here.

9. BEAUDETTE SYNCLINE PROSPECT

9.1 PROPERTY DESCRIPTION

The western portion of the Goodrich East Area contains the Beaudette Syncline Prospect. The geographical and geological limits of the prospect are outlined by the Goodrich Anticline to the south, the west limb of the Falling Creek Anticline to the east, Brenot Creek to the west, and Mt. LeHudette to the north.

The Beaudette Syncline is located approximately midway between the Hasler Creek Prospect to the east and the Lossan Mine Area to the west.

9.2 GEOLOGY

Geologically, the area consists of folded and faulted Monteith to Gething Formation sediments. Structurally, the trend is northwest to southeast.

Coal mining potential for this prospect occurs within several small synclines. The first and best known area of coal is the trenched and drilled Beaudette Syncline which contains the basal Gething coal seam. In addition, the area immediately along strike and down plunge to the south, holds potential for further low strip ratio coal. This part of the Beaudette Syncline extends from north of the Hasler Creek Road southwards along strike across Brazion Creek, for a distance of approximately 5 kilometres, and has a width of 0.5 to 1.0 kilometres of subcrop of the Brenot Formation.

The area is heavily tree covered, thereby limiting outcrop exposures. The testing of the Beaudette Syncline and its extension will require further drilling and mapping.

Folding within the Beaudette Syncline Prospect is primarily of the cuspate to Chevron style. The dominant folds are the Burnt Anticline which causes the Monteith to Monach Formations to be exposed, the Goodrich Anticline on which Beattie Peaks and Monach Formations are exposed, the Falling Creek Anticline with exposures of Dresser and Gething Formation sediments, and the Beaudette Syncline which contains the coal-bearing Dresser and Gething Formations.

All folds follow the northwest to southeast regional trend but the plunge of these structures varies. The Burnt Anticline and Beaudette Syncline plunge to the southeast, while the Falling Creek Anticline and the Goodrich Anticline both have a northerly plunge.

Three major thrust faults are believed to exist within the Beaudette Syncline Prospect. These are, from west to east the Brazion Thrust, the Beaudette Thrust and the Falling Creek Thrust. All of these thrust faults trend from northwest to southeast.

The Brazion Thrust appears to originate near Brazion Creek, while the Beaudette Thrust starts northeast of Goodrich Peak and the Falling Creek Thrust originates southeast of Mt. LeHudette.

9.3 COAL OCCURRENCES AND RESOURCES

Known coal occurrences within the Beaudette Syncline Prospect are currently confined to the immediate vicinity of the Beaudette Syncline. Many exposures are the result of the logging and road building activites of Canfor Ltd.

Eight rotary and diamond holes have been drilled within the Beaudette Syncline Prospect for a total of 1642 metres. Approximately one million tonnes of in place coal resources have been calculated from drill holes and surface trenches. However, potential exists to the south for an additional 3 million tonnes of coal.

9.4 MINING POTENTIAL

The Beaudette Syncline Prospect does not appear to have a resource base sufficient to be developed as an independent mine with infrastructure and servicing facilities. However the exeptionally close proximity of this prospect to the Lossan Mine combined with the low stripping ratio of the coal suggests that a pit located here could be mined in conjunction with the Lossan Mine.

10. COAL QUALITY

Unlike the Lossan Mine Area, a definitive statement regarding the coal quality from each of the other seven prospect areas cannot be made at present. Extensive future exploration will have to be undertaken to provide a suitable data base for this purpose. However, it is possible to make certain general observations, based on the exploration that has been completed to the present time, and regional information gained from this and surrounding coal properties.

For the various prospect areas it is reasonable to expect that many of the coal quality parameters measured for the Gething Formation seam in the Lossan Mine Area will apply to Gething Formation seams in the various prospect areas. All seams are expected to be of bituminous rank and to have a similar high thermal value for an equivalent product ash. The amount of inherent mineral matter is expected to be relatively low and most of the variation of ash content for the raw coal will depend upon the number and thickness of rock bands contained within any one seam. Usually all seams will have a sulphur content of 0.5% or less but the possibility does exist for a few high sulphur seams in which there is a high pyrite content. The ash fusion temperature should be high, often exceeding the maximum temperature of determination at 2700^{o}C. The Hardgrove Index is expected to be in the range of 60 to 100. In general the ultimate analysis values for all seams are expected to be similar to those of the Gething No. 1 Seam although variations, specific to individual seams should be anticipated.

The coking characteristics are expected to vary through a wide range for individual seams. Some of the seams will display excellent coking characteristics while others will be non coking. It is possible for some seams to have a combination of good and poor coking characteristics for different parts of the same seam as is found in the Gething No. 1 Seam in the Lossan Mine Area.

It is difficult to estimate the volatile content for coal seams in the various prospect areas. Some coal properties of the region have high volatile coal like the Lossan Mine Area while others have a low or medium volatile content. It is noteworthy, however, that although the single seam analysis for the drilled section on the Moberly Prospect has a low volatile content several trench samples from seam exposures in the same area have volatile content values in the range of 28 to 29%. This variation of early results is the same as the initial results gained in the Lossan Mine Area. In the Goodrich South Table Prospect only one analysis is available from the trench sample of the thick seam exposed near the top of the Gething Formation section. This analysis has a volatile content of about 27%. The results of this analysis, combined with the thickness and location of this seam in the stratigraphic section, strongly suggests that it is the same or a stratigraphic equivalent of the Gething No. 1 Seam in the Lossan Mine Area.

Preliminary coal quality data from oxidized coal trench samples in the Brenot Formation indicate a coal quality similar to that of the seams in the Gething Formation.

11. RECOMMENDATIONS

When consideration is given to the large quantities of surface mineable coal resources at low stripping ratios already indentified on the Goodrich Coal Property the future strategy for exploration should show emphasis in and around the surface mineable coal seams.

Engineering evaluations show that emphasis should be placed on the Moberly Prospect, especially between the Moberly and Pine Rivers and equal emphasis should be given to the Table Prospect in conjunction with the Lossan Mine Area. The South Cirque Prospect may be difficult to gain surface access to at present but future exploration is justified.

Work of a regional nature should be done on the Brenot and Gething Formation trends between the South Cirque Prospect and Brazion Creek as there is every indication that the seams are continuous. Exploration work in the remaining prospect areas should be directed towards the identification of mineable pits within those prospects. Closed synclines and dip slopes are especially important where they have a surface area of 1.0 square kilometre or more and contain mineable coal greater than 5.0 metre in thickness.

The design of exploration programs should give consideration to existing and planned regional and site infrastructure.

12. CONCLUSIONS

The present evaluation, when combined with the Lossan Mine Area preliminary feasibility study, has demonstrated that the Goodrich Property has the potential to supply at least 400 million tonnes of coal from surface mines at strip ratios of less than 8.0:1.

The Moberly Prospect is especially attractive for future exploration and development, not only because of the present indication of favourable seam thicknesses and low strip ratios, but also becuase of its location with respect to available infrastructure. Many of the infrastructure capital cost items usually included in a mining evaluation, already exist or their cost is greatly reduced due to the prospect location.

The Table Prospect can easily be integrated with a development in the Lossan Mine Area or stand on its own because of the low stripping ratios. It could constitute an expansion of production tonnages, early development of low cost coal, or a combination of both if combined with the Lossan Mine Area.

The present evaluation has shown that economically there is a more attractive alternative for the development of the Lossan Mine Area than the independent development of the deposit.

The South Cirque Prospect provides the opportunity for greatly increased annual tonnage production rates. The remaining prospect areas should not, of course, be overlooked but the identification of these areas at present increases the mining potential of the property as a whole.

CONFIDENTIAL

GOODRICH COAL PROPERTY
GEOLOGICAL REPORT
1983

00534

Gulf Canada Resources Inc.
Coal Division
December 16, 1983

MAP AND LICENCE NUMBERS

Map Numbers:

93-O-8
93-O-9
93-O-10
93-O-16
93-P-5

Licence Numbers:

4750
4751
5528
5534-5547
5551
5552
5555
5556
5558-5565
5569-5573
5575-5579
5581
5582
5585
5586
5588
5590-5593
5595-5604
5609
5615
5618-5620
5623-5625
5627-5629

5670-5678

5681
5684
5685
5690
5692-5700
5702-5732
5734
5735
5737
5738
5742-5769
5778-5783
5886
5887
5889
5923
5924
5926
5931-5933
6610-6636
6654
6659
6660
6662-6665
6684
6685
6692
6694-6698
6704
6706
7436-7439
7662-7670

Approximate Centre of Goodrich Coal Property:

Latitude: N55° 15' Longitude: W122° 25'

PREFACE

The 1983 Goodrich Coal Property Geological Report represents Gulf Canada Resources Inc.'s fifth exploration program on their largest property in northeastern British Columbia.

Past exploration programs resulted in the identification of several areas within the Goodrich Coal Property with potentially economic surface mineable resources. These areas have recently been subjected to mining and economic assessments. A preliminary feasibility study has been completed on one area, the Lossan Mine Area.

Two specific resource areas underwent more detailed examination during the 1983 exploration season. The geological and coal quality data presented here represent the current interpretation and evaluation of these two areas, the Moberly and Goodrich South Table areas.

TABLE OF CONTENTS

		Page No.
	PREFACE	
1.0	SUMMARY	1
2.0	RECOMMENDATIONS	3
3.0	INTRODUCTION	5
	3.1 Summary	5
	3.2 Property Location, Size and Access	6
	3.3 Property Ownership	9
	3.4 History of Land Tenure	11
	3.5 History of Exploration	13
	3.6 Biophysical Environment	18
4.0	1983 EXPLORATION PROGRAM	19
	4.1 Summary	19
	4.2 Objectives	21
	4.3 Field Camp and Logistics	22
	4.4 Cartography	27
	4.5 Geological Mapping	27
	4.6 Trenching	28
	4.7 Drilling	28
	4.8 Geophysical Logging	28

Page No.

4.9 Sample Analysis 31

4.10 Reclamation 32

4.11 Other Studies 32

5.0 GEOLOGY 33

5.1 Summary 33

5.2 Regional Stratigraphy 36

5.2.1 Fernie Formation 36

5.2.2 Beaudette Group 39

5.2.2.1 Monteith Formation 39

5.2.2.2 Beattie Peaks Formation 40

5.2.2.3 Monach Formation 40

5.2.3 Crassier Group 41

5.2.3.1 Brenot Formation 42

5.2.3.2 Dresser Formation 43

5.2.3.3 Gething Formation 45

5.2.4 Fort St. John Group 47

5.2.4.1 Bluesky Formation 47

5.2.4.2 Moosebar Formation 48

5.2.4.3 Commotion Formation 49

5.2.4.4 Hasler Formation 50

5.2.4.5 Goodrich Formation 50

5.3 Regional Structure 52

5.4 Moberly Prospect 55

5.4.1 Summary 55

5.4.2 Stratigraphy 57

5.4.3 Structure 64

5.4.4 Coal Occurrences 65

5.4.5 1983 Drilling 71

		Page No.
5.5	**Goodrich South Table Area**	74
	5.5.1 Summary	74
	5.5.2 Stratigraphy	74
	5.5.3 Structure	76
	5.5.4 Coal Occurrences	78
6.0	**COAL RESOURCES**	82
6.1	**Summary**	82
6.2	**Parameters**	85
6.3	**Moberly Prospect Resources**	87
6.4	**Table Area Resources**	88
7.0	**COAL QUALITY**	90
7.1	**Summary**	90
7.2	**Procedures and Parameters**	93
	7.2.1 Objectives	93
	7.2.2 Methodology	93
	7.2.3 Analytical Procedures	97
	7.2.3.1 Float Sink Data	97
	7.2.3.2 Raw Head Compositing	97
	7.2.3.3 Size Analyses	98
	7.2.3.4 Washability Study	99
	7.2.3.5 Multi-Seam Blends	99
7.3	**Coal Quality Discussion**	102
	7.3.1 Float Sink Analyses	102
	7.3.2 Size Analyses	102
	7.3.3 Raw Head Composites	103
	7.3.4 Products	106

Page No.

7.3.4.1 Single Seam Product 106

7.3.4.2 Multi-Seam Product 108

7.3.5 Trench Samples 112

7.3.6 Coal Rank 112

8.0 REFERENCES 115

LIST OF FIGURES

Figure No.	Description	Page No.
2.0.1	Coal Licence Map - Licences to be Relinquished	4a
3.2.1	Location Map	7
3.2.2	Peace River Coalfield	8
3.3.1	Coal Licence Map	10
3.4.1	History of Licence Acquisition	12
3.5.1	Geological Mapping Blocks	15
4.1.1	1983 Exploration Areas	20
4.7.1	1983 Drill Hole Locations	29
5.1.1	Regional Geology Map	35
5.2.3.2.1	Alluvial Fan Model	44
5.3.1	Regional Structural Trends	53
5.3.2	Schematic Diagram Illustrating Fold Styles	54
5.4.1.1	Moberly Prospect - Geology	56
5.4.2.1	Moberly Prospect - Geological Gross Sections	60
5.4.2.2	Measured Gething Section Location	62
5.4.2.3	Measured Stratigraphic Section - Gething Formation	63
5.4.4.1	Gething Formation - Coal Seam Distribution	70
5.4.5.1	Moberly Drill Hole Seam Correlation	73
5.5.2.1	Table Area - Geology	75
5.5.3.1	Table Area - Geological Cross Sections	77
5.5.4.1	Table Area - Stratigraphy and Coal Occurrences	80
6.1.1	Regional Coal Resources	84
7.2.2.1	Moberly Prospect - Coal Quality Data Sources	95
7.2.2.2	Coal Quality Flow Sheet	96

LIST OF TABLES

Table No.	Description	Page No.
2.0.1	Licences to be Surrendered	4
3.5.1	Summary of Exploration Activities 1980-1982	17
4.3.1	List of Personnel Employed	23
4.3.2	List of Contractors and Services	24
4.7.1	1983 Goodrich Drilling Summary	30
5.2.1	Table of Formations	37
5.2.2	Stratigraphy Nomenclature	38
5.4.2.1	Formation Thickness Variation	58
5.4.4.1	Moberly Prospect - Trench Summary	66
5.4.5.1	Moberly Drill Hole Seam Correlations	72
5.5.4.1	Goodrich South Table Area - Trench Summary	81
6.1.1	Summary of In-Situ Regional Coal Resources	83
6.2.1	Additional Resource Parameters	86
7.3.3.1	ROM - 14% Ash Multi-Seam Product	105
7.3.4.1.1	ROM - 6% Ash Single Seam Product	107
7.3.4.2.1	Clean Coal - 6% Ash Multi-Seam Product	109
7.3.4.2.2	Clean Coal - 11% Ash Multi-Seam Product	110
7.3.6.1	Coal Rank	114

GOODRICH PROPERTY - PEACE RIVER LAND DISTRICT

Work Performed on Coal Licenses in 1983

DDH 83001	7662
DDH 83002	4751
DDH 83003	7662
TRC 83001	5933
TRC 83002	5933
TRC 83003	5749
TRC 83014	5759
TRC 83015	4750
TRC 83016	5759
TRC 83017	5759
TRC 83018	5759
TRC 83019	5759
TRC 83022	5758
TRC 83023	5759
TRC 83029	5759
TRC 83030	5746
TRC 83031	5746
TRC 83032	5750
TRC 83033	5750
TRC 83034	5762
TRC 83035	5762
TRC 83036	5758
TRC 83037	5761
TRC 83038	5761
TRC 83039	5752
TRC 83041	4751
TRC 83043	4751
TRC 83044	4751
TRC 83046	4750
TRC 83047	4750
TRC 83048	4750
TRC 83051	4750
TRC 83052	5762
TRC 83053	5762
TRC 83054	5769
TRC 83055	5743
TRC 83056	4750
STRC 83007	6632
STRC 83008	6626

TABLE OF APPENDICES

INCLUDED WITH TEXT

Appendix 1	Coal Quality Data CONFIDENTIAL DATA HAS BEEN REMOVED		
Appendix 2	Coal Seam & Resource Data		
Appendix 3	Coal Licence Map	G83CL01	1:100,000
Appendix 4	Regional Geology Map	G83RG01	1: 50,000
Appendix 5ai,5aii 5b	Traverse Location Map (southeast, northeast, and west)	G83TV01,02 and 03	1: 50,000
Appendix 6	Measured Stratigraphic Section - Gething Formation		1: 200

TABLE OF APPENDICES

UNDER SEPARATE COVER

Appendix A Geology Maps and Cross-sections

Moberly Prospect

Geology Maps: 1: 10,000

G83G01	93-0-9-W-E
G83G02	-F
G83G03	-K
G83G04	-L
G83G05	93-0-16-W -C
G83G06	-D

Geological Cross-Sections: 1: 10,000

G83X01	1000S
G83X02	000
G83X03	1000N
G83X04	2000N
G83X05	3000N
G83X06	4000N
G83X07	5000N
G83X08	6000N
G83X09	7000N
G83X10	8000N

G83X11	9000N
G83X12	10000N
G83X13	11000N
G83X14	12000N
G83X15	13000N
G83X16	14000N
G83X17	15000N
G83X18	16000N
G83X19	17000N
G83X20	18000N
G83X21	19000N
G83X22	20000N

Goodrich South Table Area
Geology Maps: 1: 10,000

GS83G01	93-P-5-E-B
GS83G02	93-P-5-W-C
GS83G03	-D
GS83G04	-E
GS83G05	-F

Geological Cross-Sections:

GS83X01	7000S (east)
GS83X02	6000S (east)
GS83X03	5000S (east)
GS83X04	4000S (east)
GS83X05	4000S (west)
GS83X06	3000S (east)
GS83X07	3000S (west)
GS83X08	2000S (east)

GS83X09	2000S (west)
GS83X10	1000S
GS83X11	0000N
GS83X12	1000N
GS83X13	2000N
GS83X14	3000N
GS83X15	4000N
GS83X16	5000N
GS83X17	6000N

Appendix B Diamond Drill Hole Data

GDR-MB-DDH-83001

GDR-MB-DDH-83002

GDR-MB-DDH-83003

- Data Source Records
- Deviation Surveys
- Drill Hole Descriptive Logs
- Sample Summaries
- Coal Seam Data Sheets
- Geophysical Logs

Drill Hole Correlation Chart G83C01

Drill Hole Location Map G83DL01

Drill Hole Stratigraphic Columns with Coal Seam Detail

Appendix C Trench Data

Descriptive Logs

Drafted Logs

Simple Sample Summaries

Trench Location Map 1: 50,000 G83TL01

1.0 SUMMARY

The Goodrich Coal Property, one of the largest holdings in the Peace River Coalfield of northeastern British Columbia, consisted of 225 coal licences (66,047 hectares) during the 1983 exploration program.

The property is located approximately sixty kilometers west of Chetwynd, B.C.. Situated in the Inner Foothills of the Rocky Mountains, it covers northwesterly trending, folded and faulted strata of Upper Jurassic to Lower Cretaceous age.

The total in-situ coal resources of the Goodrich Coal Property are estimated to be 2.64 billion tonnes, of which 298 million tonnes are located in a potential mine area, the Lossan Mine Area. The remaining resources are located in several prospect areas of the property, two of which were the focus of exploration activity in 1983, the Moberly and Table areas. The coal resources of the property are summarized below:

Area	In-Situ Coal Resources (Million Tonnes)	
Moberly	958	
Table	274	
South Cirque	578	
Hasler Creek	271	
Goodrich Central	256	
Beaudette Syncline	3	
Lossan Mine Area	298	
Total:	2,639	million tonnes

During the 1983 exploration program, GCRI drilled three diamond holes in the Moberly Prospect area. Coal quality analyses of coal core combined with data obtained from trench samples indicates that, in the Moberly area, the Gething coal seams are of low to high volatile bituminous ASTM rank.

2.0 RECOMMENDATIONS

Based on the 1983 exploration program, it is recommended that:

(1) GCRI relinquish 8 coal licences, totalling 2339 hectares. These licences are listed in Table 2.0.1 and their locations shown in Figure 2.0.1. The licences to be surrendered cover unprospective Beaudette and Crassier Group strata.

(2) Exploration continue within the Moberly Prospect to confirm the coal resource potential of the area and to further investigate the quality of the Gething coal seams.

(3) An investigation be conducted of the coal resource potential within the Brenot Formation throughout the property in order that the coal prospects of the licences overlying these strata can be evaluated.

(4) Detailed exploration be conducted on minimally explored areas such as Goodrich Central, South Cirque, and Hasler Creek to evaluate the coal resources of these areas and to define potential mine sites.

Table 2.0.1

GOODRICH COAL PROPERTY
LICENCES TO BE SURRENDERED

Licence No.	Hectares	Date of Aquisition
*6692	294	September 29, 1980
*6704	293	September 29, 1980
7665	292	April 10, 1983
7666	292	April 10, 1983
7667	292	April 10, 1983
7668	292	April 10, 1983
7669	292	April 10, 1983
7670	292	April 10, 1983

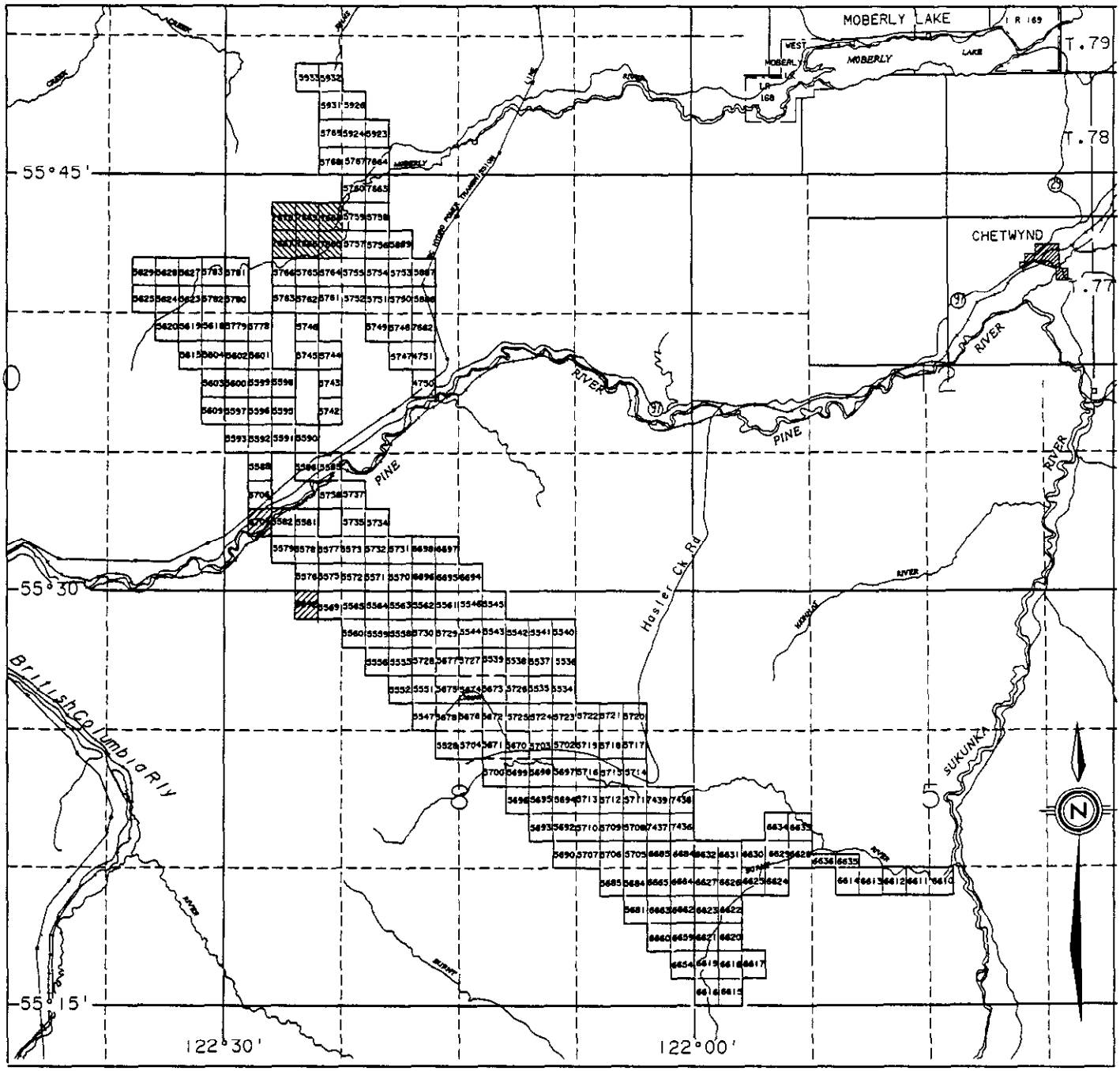
Total: 8 licences 2339 Hectares

*Relinquished September 29, 1983

FIGURE 2.0.1

GOODRICH COAL PROPERTY

COAL LICENCE MAP



FILE NAME OSO:[205.571830998008 LOC.] 26/10/83

3.0 INTRODUCTION

3.1 Summary

The Goodrich Coal Property is located in northeastern British Columbia within the Peace River Coalfield. During the period of the 1983 Exploration Program, the property consisted of 225 coal licences covering 66 047 hectares. The property is underlain by Lower Cretaceous coal-bearing strata which are generally expressed in northwesterly trending valleys and ridges ranging in elevation from 680 metres to 2100 metres.

Good all-weather roads, seismic lines, forestry roads, and powerline roads provide ground access to portions of the property; the remainder must be reached by rotary wing aircraft.

Exploration on the Goodrich Coal Property began in 1979; to date a total of 565 coal exposures have been trenched and 89 drill holes have been completed for a total of 24 169 metres of drilling. These exploration efforts have outlined six prospect areas with potentially economic surface mineable resources as well as one mine area, the Lossan Mine Area.

Two of these six prospects, the Moberly and Goodrich South Table prospects, were further investigated in detail during the 1983 field exploration program.

3.2 Property Location, Size and Access

The Goodrich coal licences lie within the Inner Foothills of the Rocky Mountains in the northeast British Columbia Peace River Coalfield. Figure 3.2.1 shows the location of the Goodrich Coal Property, approximately 60 kilometres west of Chetwynd, B.C., along the Pine River Valley transportation corridor.

The property covers approximately 660 square kilometres, extending from the Burnt River in the south to Johnson Creek in the north, and is one of the largest in the Peace River Coalfield as shown in Figure 3.2.2. Northwest-trending coal-bearing Lower Cretaceous strata underlie the property for approximately 70 kilometres of strike length.

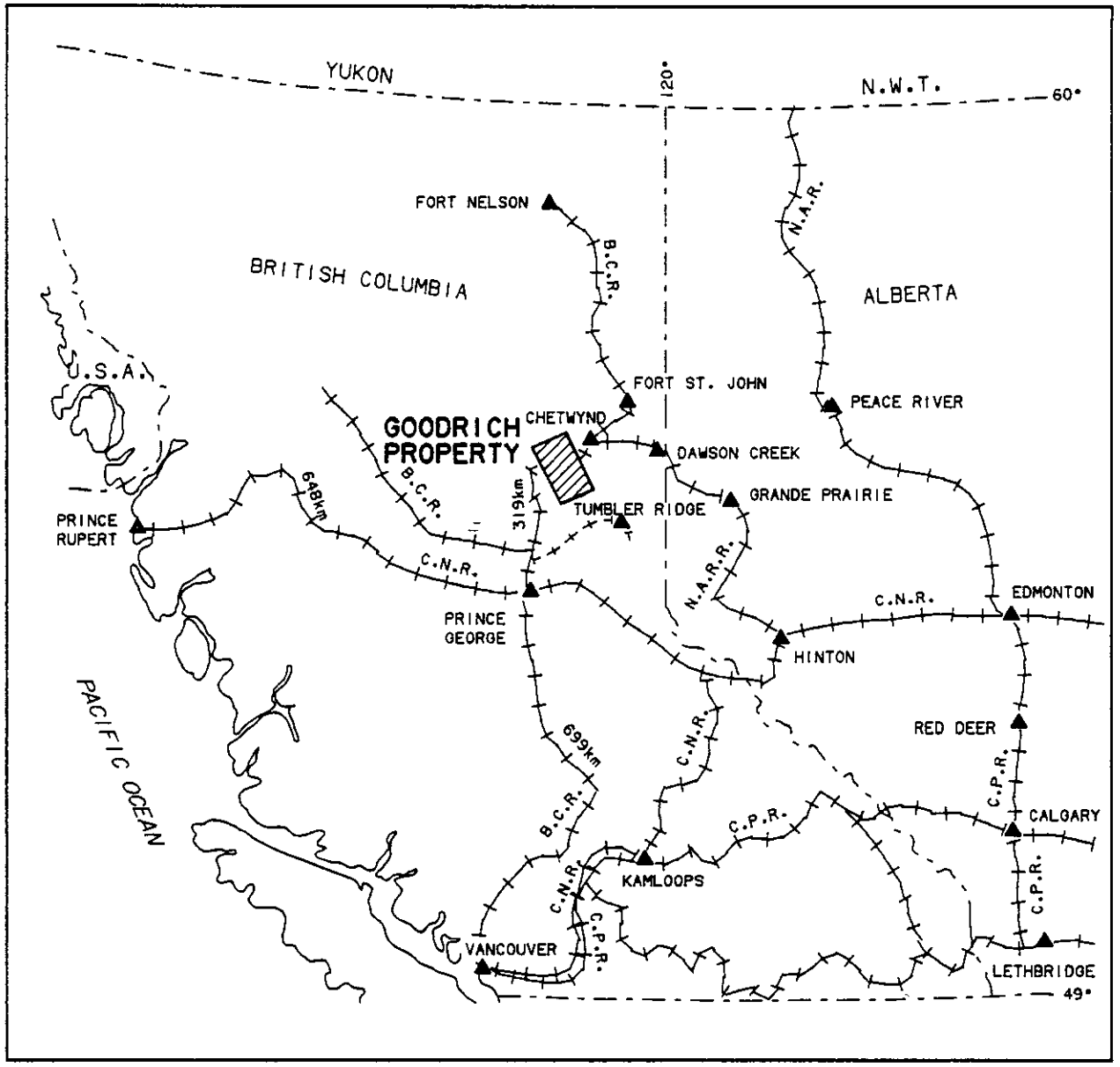
Access to the Goodrich Coal Property is provided primarily by the John Hart Highway (Hwy. No. 97), an all-weather paved road linking Chetwynd to Prince George, B.C. The British Columbia Railway parallels the highway through the property along the Pine River Valley transportation corridor.

The all-weather gravel Hasler Creek Road provides access to some areas south of the Pine River Valley such as the Lossan Mine Area. Areas to the north are in part accessed via B.C. Hydro's power line roads and logging roads. More remote regions of the property can be accessed by seismic lines, logging spur roads, and through the use of rotary wing aircraft.

FIGURE 3.2.1

GOODRICH COAL PROPERTY

LOCATION MAP



LEGEND

RAILROAD

ANZAC RAILROAD

SCALE:

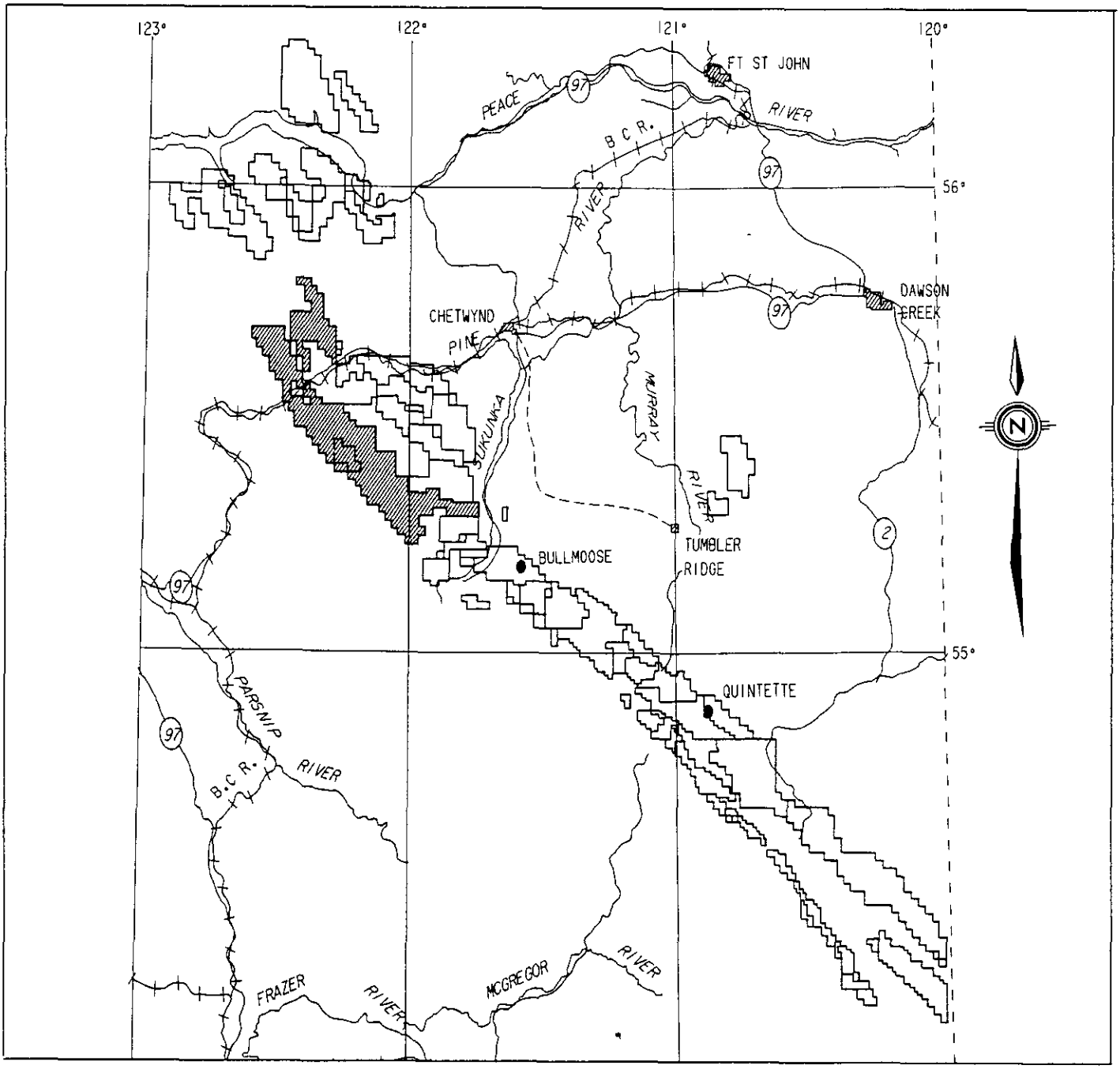
0 100 200 km (APPROX.)

Gulf

FIGURE 3.2.2

GOODRICH COAL PROPERTY

PEACE RIVER COALFIELD



GOODRICH

PEACE RIVER COALFIELD

COAL MINES

SCALE

KILOMETRES

0 25 50

Gulf

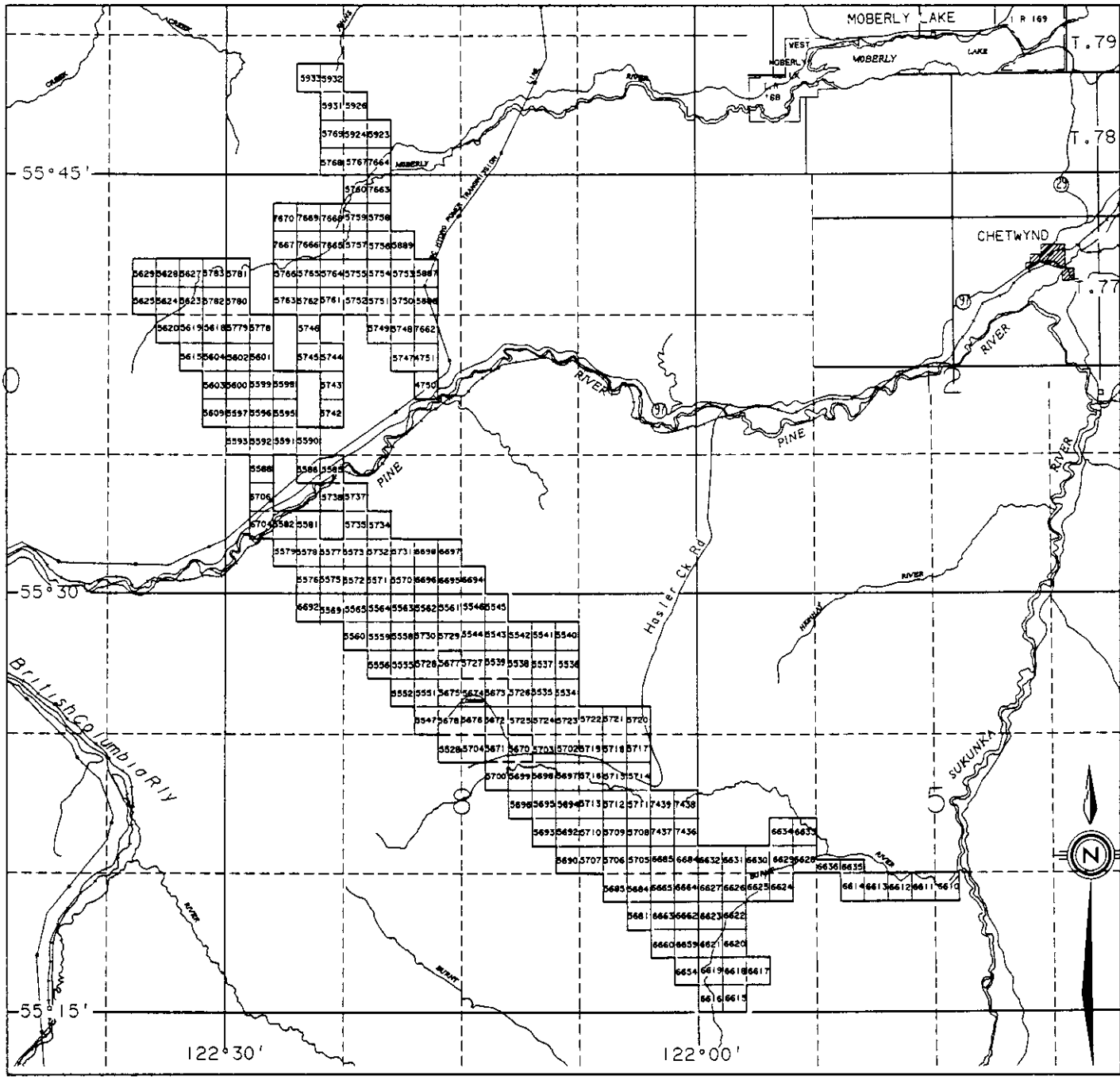
3.3 Property Ownership

Gulf Canada Resources Inc. wholly owns 216 of the 225 coal licences known as the Goodrich Coal Property, as well as all coal licence applications. Licences 5670 to 5678, inclusive, are optioned from Lossan Exploration Ltd. (Figure 3.3.1)

FIGURE 3.3.1

GOODRICH COAL PROPERTY

COAL LICENCE MAP



SCALE

KILOMETRES 0 5 10

Gulf

FILE NAME QSO 1205,571830998005 LOC,1 26/10/83

3.4 History of Land Tenure

Gulf Canada Resources Inc. initiated a reconnaissance exploration and mapping program in the Rocky Mountain Foothills of northeastern British Columbia in 1979. This program resulted in the acquisition of 184 coal licences (53 900 hectares) in 1979.

In 1980 the property attained its maximum size of 367 coal licences totalling 107 500 hectares when an additional 132 licences were acquired by application to the Crown, 11 licences were transferred from Gulf's Trefi Coal Property, and 38 licences were optioned from M. Suska.[1]

Despite the acquisition of a few licences in 1982 and 1983, exploration of the property has resulted in a net reduction of the size of the property through the surrender of generally unprospective licences. The property was reduced to 276 coal licences (80 681 hectares) in 1981 and to 225 licences (66 047 hectares) in 1982 (Figure 3.4.1).

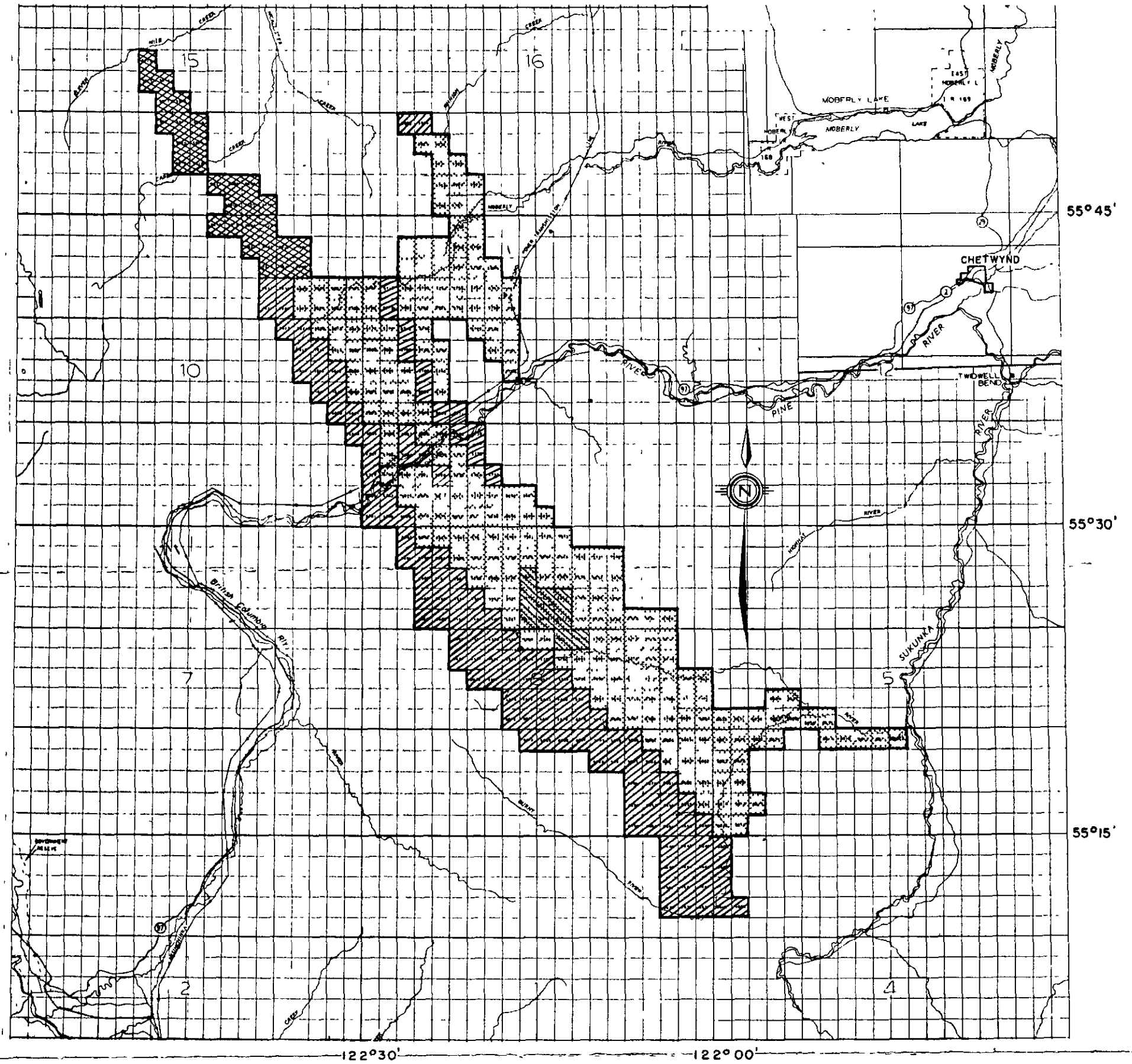
[1]M. Suska, at the time of the option, was duly authorized representative of Westhill Management Ltd. Frank O'Sullivan Petroleum Co. Ltd, Marnell Holdings Ltd., and Whiterabbit Resources Ltd. collectively the owners of 29 of the 38 coal licences, and of Lossan Exploration Ltd., the owner of the remaining 9 coal licences.

AQUISITIONS

LICENCES AS OF AUGUST 1983

SURRENDERS

OPTIONED FROM M. SUSKA et al



1 402,286

FIGURE 3.4 1

GOODRICH COAL PROPERTY

HISTORY OF LICENCE ACQUISITION

12/12/83

3.5 History of Exploration

In 1979, Gulf Canada Resources Inc. initiated a reconnaissance exploration and mapping program, based on reported observations of Minnes Group coals in the area. This program resulted in the discovery that in the present Goodrich Coal Property the previously interpreted Minnes strata were actually younger strata of the Dresser-Cadomin and Gething Formation. As a result of the 1979 reconnaissance program, GCRI acquired a large group of licences and began a systematic program of exploration. The objectives of these exploration programs are summarized below:

1) To identify and delineate regions of coal-bearing strata and consolidate the land position to cover only those areas containing economic coal deposits.
2) To identify potentially mineable areas and bring these areas to the feasiblity stage promptly.

Since the initial reconnaissance program of 1979, GCRI has completed five field programs:

In the summer field program of 1980, geological mapping, and hand trenching of coal exposures resulted in the identification of several drill targets, primarily in the area now known as the Lossan Mine Area. A fall drilling program of 54 test holes totalling 14 236 metres was completed. All drill holes were geophysically logged and their elevations and locations surveyed.

Quality analyses of coal cores were completed on both raw and clean coal samples. In addition to the drilling, 3.1 km. of electrical (resistivity and gravity) surveys were run to determine the feasibility of alternate subsurface investigation techniques. These techniques were found to be unsatisfactory because of areas of complex structure within the property.

The 1981 field program consisted of geological mapping, hand trenching of coal exposures, and 9633 metres of drilling in 32 coal test holes. Encouraging results from previous work on the area now known as the Lossan Mine Area led to further drilling there. To facilitate the drilling, 4.1 km of road (the Lossan Road) were built. Other areas were also tested by drilling: Moberly, Goodrich Central and Goodrich East (Beaudette Syncline). Figure 3.5.1 illustrates the division of the property into "geological mapping blocks".

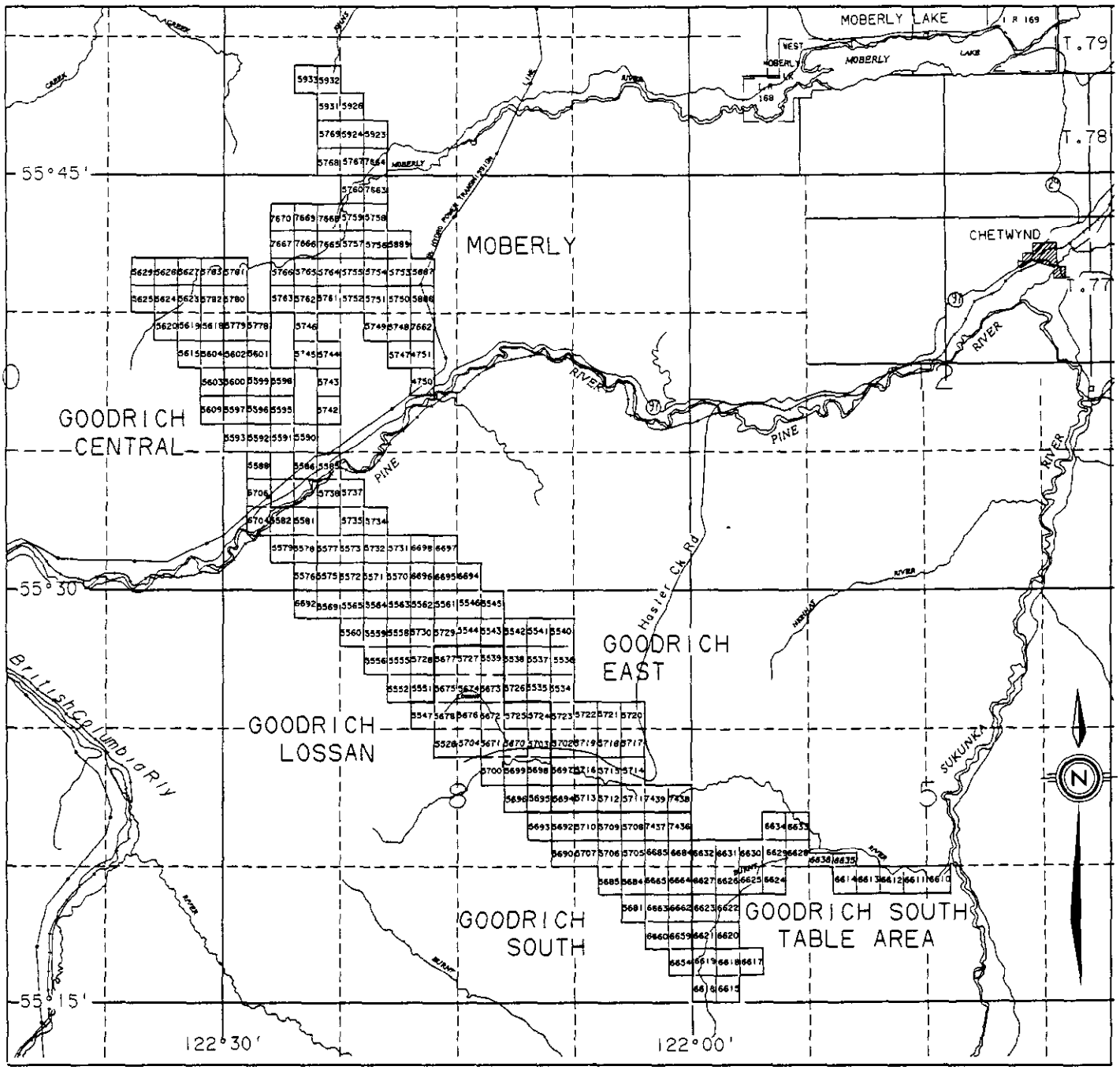
In addition to mapping and drilling, a Mini-Sosie survey was conducted. The Mini-Sosie is a new high resolution reconnaissance seismic survey. The results of this survey also proved to be inconclusive.

The 1982 field program consisted of detailed investigation through mapping and trenching to evaluate several areas of the Goodrich Coal Property. In the Lossan Mine Area, an adit was driven into the major seam (the Gething No. 1 Seam) and a total of 84.8 tonnes of raw unoxidized coal was removed, washed, and analyzed. In addition a 3 tonne oxidized sample was taken from the seam. A preliminary feasibility study of the Lossan Mine Area

FIGURE 3.5.1

GOODRICH COAL PROPERTY

GEOLOGICAL MAPPING BLOCKS



SCALE

KILOMETRES 0 5 10

Gulf

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was conducted concurrent with the 1982 field program and completed in the fall of 1982. In addition, mining and economic assessments were made of resource areas delineated as a result of the 1982 and previous exploration programs. The assessments were completed in February, 1983.

The exploration activities described above are summarized in Table 3.5.1.

Table 3.5.1

SUMMARY OF EXPLORATION ACTIVITIES
1980-1982

Description of Work	1980	1981	1982
Diamond Drill Holes:	28 (8098 m)	22 (7054 m)	-
Rotary Drill Holes:	26 (6138 m)	10 (2579 m)	-
Adits:	-	-	1
Trenches:	197	152	152
Mapping (scales):	1:10 000, 1:50 000	1:5 000, 1:10 000, 1:25 000, 1:50 000	1:5 000, 1:10 000, 1:25 000, 1:50 000
Coal Analyses:			
Simple:	420	195	13
Composite:	19	44	-
Bulk:	-	-	88 tonnes
Seismic Surveys:	Gravity (1560 m) Electromagnetic (1600 m)	Mini-Sosie (8500 m)	-
Road Construction:	-	4.1 km	-
Preliminary Feasibility Studies:	-	-	Lossan Mine Area
Mining & Economic Assessments:	-	-	Resource Areas (Goodrich Coal Property)

3.6 Biophysical Environment

Physiographically, the Goodrich Coal Propety lies within the Inner Foothills of the Rocky Mountains. Topographically, the area consists of heavily glaciated northwesterly trending ridges and valleys with elevations ranging from 2100 metres at Mt. Stephenson to 680 metres at the Pine River Valley.

The property is drained by portions of the Pine, Moberly, and Sukunka River watersheds.

Vegetation ranges from alpine tundra in the higher elevations to sub-alpine spruce and fir on the uplands adjacent to the river valleys. The river valleys are dominated by large stands of spruce, fir, pine, and some birch.

4.0 1983 EXPLORATION PROGRAM

4.1 Summary

The 1982 Goodrich Geological Report defined seven prospect areas for further evaluation. Field studies in 1983 concentrated on two of the prospects: the Moberly and Goodrich-South Table areas (Figure 4.1.1). Work consisted of detailed mapping and a subsequent diamond drilling program.

The Moberly area lies in the northeastern extension of the Goodrich Property and consists of 48 licences which comprise 14 023 hectares. The prospect is cut by the Moberly River in the central area and transected by two hydro power transmission lines in the south. Forestry access and spur roads and power line service roads provide ground access to much of the southern part of the area. The remaining area can be accessed by helicopter.

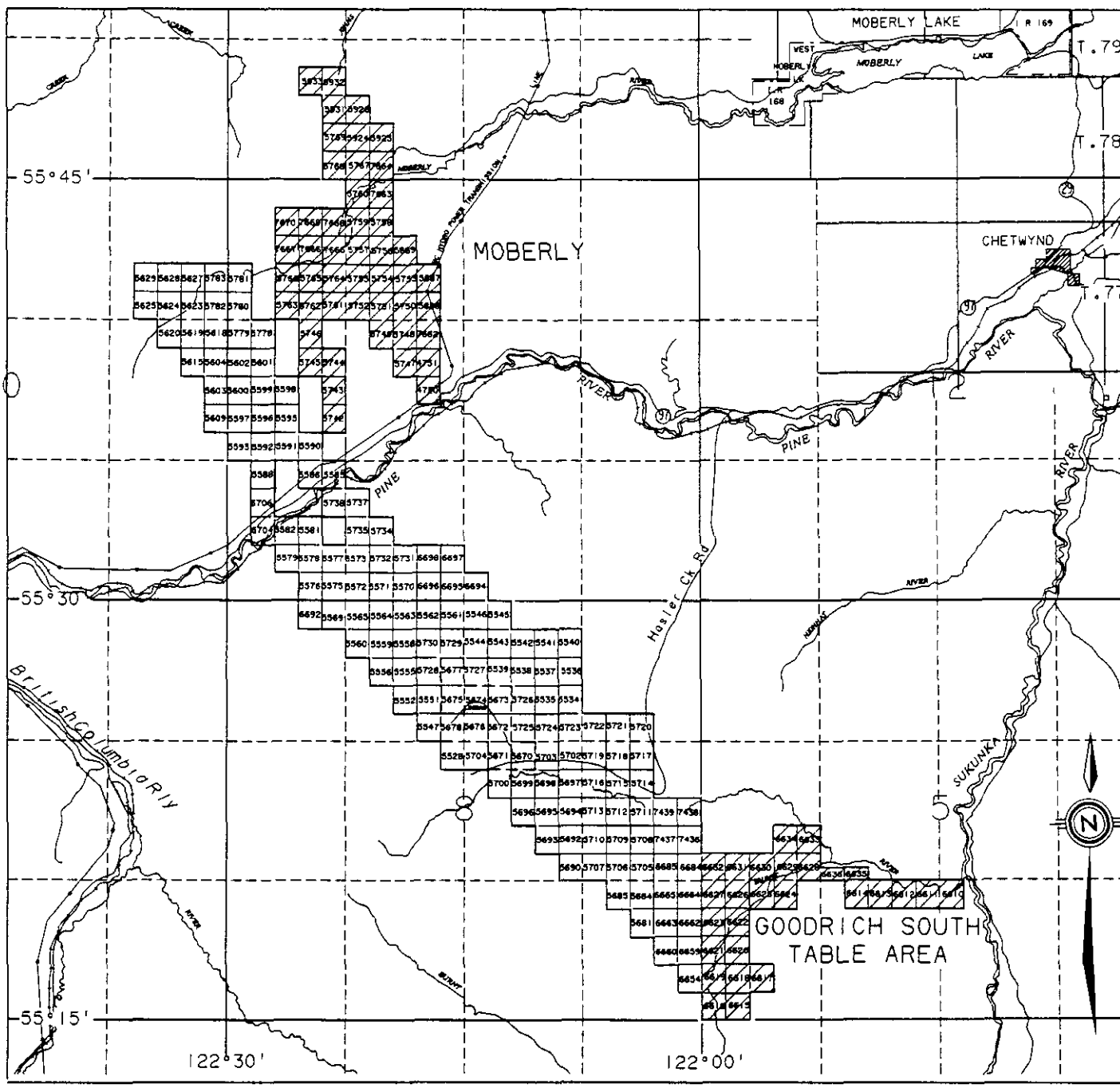
The Goodrich-South Table area lies along the Burnt River in the southeastern portion of the property and is accessible only by helicopter. The prospect consists of 25 licences and 2 partial licences and covers a total area of 7671 hectares.

The exploration program spanned the period of May to November, 1983, of which time two months, mid-June to mid-August, were spent in the field. The remaining time was spent in field preparation, data compilation, evaluation and report writing.

FIGURE 4.1.1

GOODRICH COAL PROPERTY

1983 EXPLORATION AREAS



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4.2 Objectives

At the completion of the 1982 field program seven areas had been delineated within the Goodrich Coal Property which contained potentially economic surface mineable coal resources. The objectives of the 1983 exploration program were to further investigate two of these prospect areas; the Moberly and Goodrich South Table areas. Specifically these objectives were:

Moberly Area:

1) to geologically map in detail and hand trench all coal exposures;

2) to test current stratigraphic correlations by drilling;

3) to obtain preliminary coal quality data for the Gething seams from unoxidized drill core;

4) to determine a resource potential for the area.

Table Area:

1) to geologically map in detail and hand trench all coal exposures;

2) to evaluate the resource potential of the prospect.

4.3 Field Camp and Logistics

The 1983 Goodrich field program commenced operations in the town of Chetwynd, B.C. on June 13. Lodging and office space was supplied by a local apartment complex and personnel obtained meals at several restaurants in town.

Field equipment was mobilized from Calgary to Chetwynd in two leased four by four trucks. These trucks were used in conjunction with one Bell 206B Jet Ranger helicopter to transport personnel during the program.

The field party was comprised of four two-person mapping teams. Old forestry and power line roads provided good access to the southern portion of the Moberly area. Crews were otherwise transported by helicopter.

Drilling and geophysical logging personnel arrived during the latter part of the program and were accommodated in a local motel. Transportation to the drill sites was provided by helicopter. A Bell 204B, working in conjunction with a Bell 206B, was required for drill rig moves.

Radio communication was maintained with all field personnel utilizing a base station radio and hand held portables. A battery operated repeater station was located on Mount LeHudette.

Field operations ceased on August 22. Field equipment was stored in a leased Chetwynd warehouse or returned to Calgary.

Table 4.3.1

LIST OF PERSONNEL EMPLOYED

Gulf Personnel

G.D. Childs - P.Geol.	Coordinator Coal Geology
H.D. Zschach - P.Geol.	Senior Geologist
V.L. Duford	Project Geologist
E. Swanbergson	Geologist
R.G. Inkster	Senior Geological Assistant
M.J. Milne	Senior Geological Assistant
C.R. Goodings	Geological Assistant
D.J Dolph	Geological Assistant
A. Motyka	Geological Assistant
S.M. Sparks	Technologist
H. Bharadia	Technical Assistant
L.M. Callow	Co-ordinator, Environmental Planning
G.G. Erickson	Systems Analyst
D.L. Radcliffe	Secretary
C.D. Ireland	Secretary
A.M. Chade	Secretary
P. Tsavalos	Bookkeeping and Accounting

Drafting & Reprographics

Interactive Graphics

Consultants

B. Carpenter	Norwest Resource Consultants Ltd.
K. Fujita	Norwest Resource Consultants Ltd.

Table 4.3.2

LIST OF CONTRACTORS AND SERVICES

Accommodations

Place Concord Apartments	Calgary, Alberta
Windrem Place Apartments	Chetwynd, B.C.
Stagecoach Inn	Chetwynd, B.C.

Aircraft

Northern Mountain Helicopters	Prince George, B.C.
Highland Helicopters Ltd.	Chetwynd, B.C.

Truck Rentals and Fuel

King Truck Rental Ltd.	Calgary, Alberta
Gulf	Chetwynd, B.C.
Texaco	Chetwynd, B.C.

Trucking

Canadian Freightways	Dawson Creek, B.C.
Wayne Asleson Trucking	Chetwynd, B.C.

Coal Quality

Loring Laboratories	Calgary, Alberta
David E. Pearson & Assoc. Ltd.	Victoria, B.C.
Dunlop Research Centre	Mississauga, Ontario
Gulf Sheridan Park	Mississauga, Ontario

Communications

West Can Electronics	Calgary, Alberta
B.C. Telephones	Chetwynd, B.C.
Petron Communications Ltd.	Ft. St. John, B.C.

Surveying

McElhanney and Associates	Chetwynd, B.C.

Drilling

J.T. Thomas Diamond Drilling Ltd.	Smithers, B.C.

Geophysical Logging

Century Geophysical Corp. of Canada	Calgary, Alberta

Supplies

Neville Crosby	Vancouver, B.C.
Beaver Lumber	Chetwynd, B.C.
McLeods	Chetwynd, B.C.
Little Giant	Chetwynd, B.C.
Cansel Survey Equipment	Calgary, B.C.

Drill Site Preparation and Reclamation

Peace Dozing and Contracting Ltd.	Chetwynd, B.C.

Airphotos

B.C. Gov't Surveys and Mapping Branch	Victoria, B.C.

Miscellaneous

Trapper Mountain Developments Inc.	Chetwynd, B.C.
Northland Storage & Warehousing Ltd.	Chetwynd, B.C.
Economy Bookbindery	Calgary, Alberta
W. Neuls	Chetwynd, B.C.

A list of geological and support staff is presented in Table 4.3.1. Table 4.3.2 summarizes major contractors and services used during the 1983 program.

4.4 Cartography

During October of 1980 the property was flown to produce 1:25 000 scale aerial photographs for geological interpretation and for the later production of 1:10 000 scale topographic map sheets over the 1983 exploration areas. These maps were produced with 10 metre contour intervals and extended only to the property boundary. Any additional coverage required was obtained by blowing up 1:50 000 scale NTS topographic maps, converting the contours to metric and tying them in with the existing property maps.

4.5 Geological Mapping

The 1983 exploration program involved detailed geological mapping at a 1:10 000 scale over the areas as outlined in Figure 4.1.1. Mapping teams completed stream, road and ridge traverses using airphotos to locate stations and tie to known points. The outcrop data was then transferred from the airphotos to a topographic base map in the field office. Data acquired from 2 previous years mapping was also incorporated with this study. The resulting geological interpretations of the mapping areas have been represented on maps and cross-sections at the same scale (Appendix A).

A regional overview of the property geology is presented at a 1:50 000 scale (Appendix 4).

4.6 Trenching

Hand trenching was undertaken by geological mapping teams during routine traverses as coal exposures were discovered. Sixty-three trenches were dug and logged during the program; 55 in Moberly and 8 in the Table area.

The trenches averaged 4.90 metres in length, 0.80 metres in depth and 0.60 metres in width. A 1:50 000 Trench Location Map, as well as all trench data, are located in Appendix C.

4.7 Drilling

Three diamond drill holes were completed during the 1983 program for a total of 400 metres of drilling. A Longyear Super 38 drill rig, equipped with 5 and 10 foot wireline core barrels, was used to obtain HQ core. The rig was mobilized to a staging area on the John Hart Highway and was air lifted by helicopter to the drill sites (Figure 4.7.1). The drill crew operated on a two shift, 24 hour a day basis and completed drilling within 12 days.

Each drill hole has been surveyed and appears on all appropriate maps and cross-sections. Table 4.7.1 summarizes the details of the drill program. All drilling data are located in Appendix B.

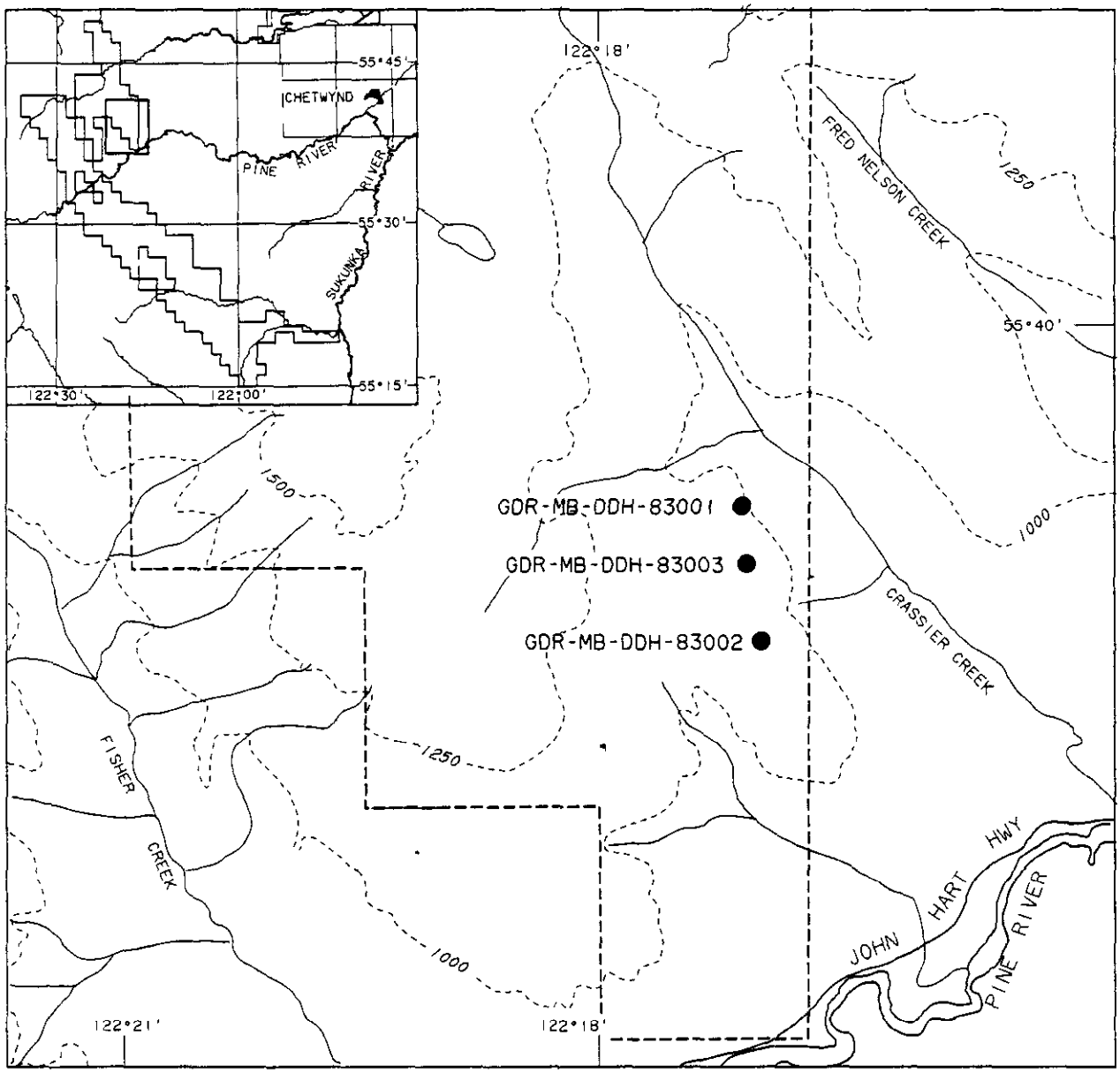
4.8 Geophysical Logging

All drill holes were geophysically logged and resulted in the following suite of logs for each hole:

FIGURE 4.7.1

GOODRICH COAL PROPERTY

1983 DRILL HOLE LOCATIONS



● DRILL HOLE LOCATIONS

GULF LICENCE BOUNDARY

SURFACE CONTOUR (m)

SCALE:

0 1 2 km

Gulf

Table 4.7.1

1983 GOODRICH DRILLING SUMMARY

Data Source	Area	Location	Licence Number	Elevation	Length	Angle	Azimuth	Geophysical Logging
GDRMBDDH 83001	Moberly	6,167,563.2m N 545,153.9m E	7662	1065.3 m	104.63 m	60°	251.8°	Open Hole
GDRMBDDH 83002	Moberly	6,166,589.3m N 545,298.1m E	4751	1079.4 m	99.00 m	60°	246.2°	Open Hole
GDRMBDDH 83003	Moberly	6,167,177.8m N 545,266.9m E	7662	1067.9 m	196.00 m	60°	231.5°	Open Hole
				TOTAL DRILLING	399.63 m			

a) Gamma Ray
b) Neutron
c) Sidewall Density
d) Focused Beam Resistivity
e) Caliper
f) Directional Deviation

The logs were printed at scales of 1:100 and 1:400 with 1:40 scale logs also being produced for detailed work on the coal seams.

A digital geophysical logging system was utilized which records all down-hole probe information directly onto magnetic tapes. Paper prints were obtained in the field to assist in core logging and correlations. Appendix B contains the log suites from each drill hole.

4.9 Sample Analysis

All drill core coal samples in excess of 0.5 metres apparent thickness and selected hand trench samples greater than 1.5 metres in true thickness were submitted for preliminary analysis to an independant laboratory.

Details of the analytical procedures and all results are discussed further in Section 7.0 of this text. Coal Quality data are presented in Appendix 1.

4.10 Reclamation

Environmental disturbances were minimal during the exploration program and were restricted to drill sites and hand trenches. Any equipment or refuse associated with these locations was removed.

The three drill sites required clearing of spruce and pine trees. The spruce trees were cut and stacked to be burned this winter, as requested by B.C. Forestry, to prevent the spread of the Spruce Bark Beetle. The majority of coal seam hand trenches were backfilled upon completion. A minimal number of trenches remain open for further investigation, and backfilling will be undertaken at a later date.

4.11 Other Studies

In February of 1983 a "Resource Area Mining and Economic Assessments" study was completed by a contracted consulting firm. Based on 1982 data, the report evaluated the surface mining potential of the seven Goodrich prospect areas with specific interest being given to the Moberly, Goodrich-South Table and Goodrich-South Cirque prospects.

5.0 GEOLOGY

5.1 Summary

The Goodrich coal licences are situated west of Chetwynd, B.C. and lie within the Rocky Mountain Foothills. The property extends from the Burnt River in the south to Johnson Creek in the north.

Geologically, the area consists of an elongated, northwest trending, tectonic slice of coal-bearing and non-coal-bearing Lower Cretaceous-Jurassic sediments. The property exposes strata of the Fernie Formation of the Jurassic and the Beaudette, Crassier, and Fort St. John Groups of the Lower Cretaceous.

Coal measures are found in the Brenot, Dresser, and Gething Formations of the Crassier Group, as well as in the Commotion Formation of the Fort St. John Group.

Several areas with open pit mining potential in the Gething Formation have been identified on the Goodrich Coal Property. To date the thickest coal seams found have been in the upper Gething Formation. In the Moberly area, drilling and trenching have indicated the presence of 6 coal zones within the Gething Formation containing a total of at least 27 coal seams. In any one area of the Moberly Prospect, up to 17 seams are interpreted to occur with an average aggregate thickness of 28 metres over a 320 metre interval.

South of the Pine River Valley, the Brenot Formation contains coal and exploration to date indicates that the Brenot Formation

thickens to the south and coal seams become more prolific.

The geology of the property is illustrated in Figure 5.1.1 as well as on a 1:50 000 geological compilation map included with this report.

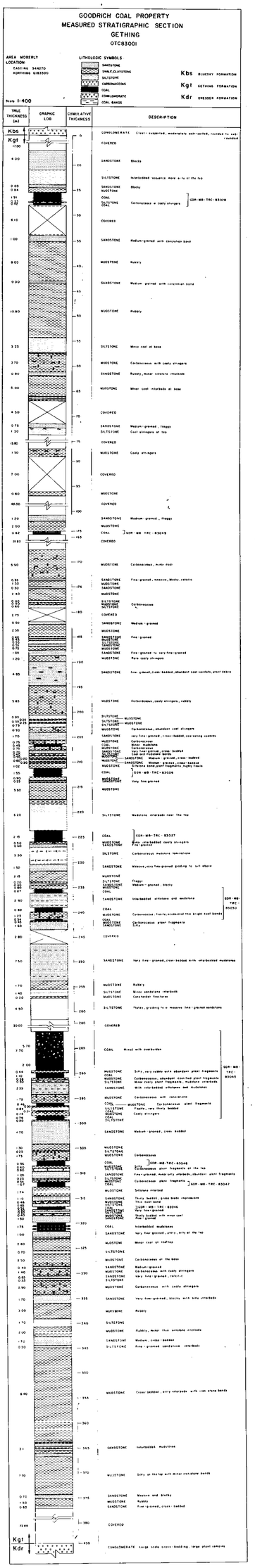


FIGURE 5.4.2.3.

GOODRICH COAL PROPERTY

MEASURED STRATIGRAPHIC SECTION

GETHING FORMATION

12/12/83

TABLE OF FORMATIONS

Period	Group	Symbol	Formation
UP. CRET.		Q	QUATERNARY Glacial deposits and alluvium
	FORT ST. JOHN GROUP	Kcr	CRUISER FORMATION Mudstone, siltstone
		Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
LOWER CRETACEOUS		Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
		Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member and conglomerates
		Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
		Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
	CRASSIER GROUP	Kgt	GETHING FORMATION Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit. COAL
		Kdr	DRESSER FORMATION Incomplete cyclothems, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits and conglomerates
TRANSITIONAL	BEAUDETTE GROUP	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones carbonaceous mudstones. COAL
		JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales siltstones and sandstones with occasional thin conglomerates
		JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
		JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained, fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates
JURASSIC		Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones siltstones, marine

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location (A — A')
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

Conglomerate	Claystone/Mudstone
Sandstone	Coal
Siltstone	Silty Claystone
Quartzite	Carbonaceous Claystone

FIGURE 5.1.1

GOODRICH COAL PROPERTY 1983

REGIONAL GEOLOGY

Gulf

12/12/83

5.2 Regional Stratigraphy

Cretaceous strata are exposed along the entire Foothills Belt of the Rocky Mountains within northeastern British Columbia. These strata contain deposits of several major deltas and reveal a complex interrelationship of continental to marine sediments.

The Goodrich Coal Property is underlain primarily by Lower Cretaceous sediments, of the Beaudette, Crassier and Fort St. John Groups. There are limited areas in which older strata of the Jurassic Fernie Formation are exposed.

A table of formations is presented in Table 5.2.1. Table 5.2.2 illustrates the relationship between the system of nomenclature used by GCRI and that used by the Geological Survey of Canada.

The main emphasis of exploration on the Goodrich Coal Property has been within the Crassier Group which can be further subdivided into the Brenot, Dresser, and Gething Formations. The Crassier Group represents a time of major coal deposition in the Cretaceous.

5.2.1 Fernie Formation

The Fernie Formation of Jurassic age is the oldest unit exposed on the property and consists of dark grey to black shales, mudstones, siltstones and sandstones, although shales and mudstones are generally the predominant lithologies. The Fernie Formation was deposited under marine condi-

Table 5.2.1
TABLE OF FORMATIONS

Series	Group	Formation	Approx. Thickness (m)	Lithology
Lower Cretaceous	Fort St. John	Goodrich	150 - 250	Sandstone, siltstone & mudstone, minor conglomerate.
		Hasler	210 - 340	Mudstone, siltstone, thin sandstone, marine.
		Commotion Walton MBR	320 - 520	Siltstone, sandstone, mudstone, COAL.
		Boulder Cr. MBR		Fine-grained, well sorted sandstone, massive conglomerates, non-marine sandstone and mudstones.
		Hulcross MBR		Dark grey marine shale with siderritic concretions.
		Gates MBR		Fine-grained, marine and non-marine sandstone, conglomerates, mudstones, COAL.
		Moosebar	350 - 450	Mudstone, minor siltstone, marine.
		Bluesky	2 - 15	Fine to medium-grained sandstone, mudstone, conglomerate unit at top with or without glauconite.
	Crassier	Gething	350 - 500	Cyclothems, dark grey mudstone, siltstone; very fine to medium-grained sandstone, carbonaceous silty, sandy mudstones; coalified plant debris, minor bentonite, black shale and occasional minor tuffs in upper unit. COAL.
		Dresser	250 - 300	Incomplete cyclothems, discontinuous coal measures in varying thicknesses; medium to very coarse-grained sandstone, grits and conglomerate.
		Brenot	150 - 300	Lithic "salt & pepper" sandstone, siltstone, mudstone, carbonaceous mudstone. COAL
Transitional	Beaudette	Monach	125 - 250	Marine lithic & quartzose sandstone, with thick beds of clean, coarse-grained white quartzite at top. Minor shales, siltstones and sandstones, with occasional thin conglomerate.
		Beattie Peaks	225 - 350	Buff to brownish sandstones, fine to medium-grained, thinly bedded black & dark grey shales, siltstones, thin sandstones with iron-stone banding.
		Monteith	350 - 450	Grey & brown sandstones, fine to medium-grained. Fine to very coarse-grained quartzite. Minor beds of shales, and shales with siltstone & sandstone partings, with occasional thin conglomerates.
Jurassic	Fernie	Fernie	Incomplete Section	Dark grey to black shale, mudstone, siltstone, sandstone, marine.

Table 5.2.2

STRATIGRAPHY NOMENCLATURE*

	GULF CANADA RESOURCES INC.			GEOLOGICAL SURVEY OF CANADA	
Lower Cretaceous	Fort St. John Group	GOODRICH FORMATION		Fort St. John Group	GOODRICH FORMATION
		HASLER FORMATION			HASLER FORMATION
		COMMOTION FORMATION	WALTON MEMBER		BOULDER CREEK FORMATION
			BOULDER CREEK MEMBER		
			HULCROSS MEMBER		HULCROSS FORMATION
			GATES MEMBER		GATES FORMATION
		MOOSEBAR FORMATION			MOOSEBAR FORMATION
		BLUESKY FORMATION			
	Crassier Group	GETHING FORMATION		Bullhead Group	GETHING FORMATION
		DRESSER FORMATION			CADOMIN FORMATION
Transitional		BRENOT FORMATION		Minnes Group	BICKFORD FORMATION
	Beaudette Group	MONACH FORMATION			MONACH FORMATION
		BEATTIE PEAKS FORMATION			BEATTIE PEAKS FORMATION
		MONTEITH FORMATION			MONTEITH FORMATION
Jurassic	FERNIE FORMATION			FERNIE FORMATION	

*Not to Scale

tions and represents a transgressive phase (Stott, 1973). The formation thickness is indeterminate due to its recessive nature and lack of exposure on the property.

5.2.2 Beaudette Group

The Upper Jurassic-Lower Cretaceous Beaudette Group transitionally overlies the Fernie Formation and is comprised of the Monteith, Beattie Peaks, and Monach Formations. The group, which is exposed throughout the Goodrich property, has a maximum thickness of approximately 1000 metres in the area between the Burnt and Peace Rivers. The group forms positive areas such as Mount Bickford north of the Pine Valley, Mount Stephenson and Mount Gilliland south of Pine Valley, and Mount LeHudette in the Goodrich East area. The Beaudette Group is essentially non-coal-bearing.

5.2.2.1 Monteith Formation

The Monteith Formation is the oldest of the Beaudette Group and consists of predominantly fine to medium-grained sandstones of delta front origin (Stott, 1973). The formation is characterized by some thick intervals of fine to coarse-grained quartzites at the top. Often quartizite bed surfaces are covered with stylolitic films (Mathews, 1946). This resistant unit is interbedded with minor recessive beds of shale and thin beds of conglomerate. The Monteith Formation is generally finer-grained than the Monach (especially the quartzites) and the two can usually be distinguished on that basis (Karst, 1980). The formation

varies in thickness from 350 to 450 metres, and is predominantly exposed along the west edge of the property and in other isolated locations.

5.2.2.2 Beattie Peaks Formation

The Beattie Peaks Formation conformably overlies the Monteith. The formation consists of fine to medium-grained, brown to medium grey sandstones with minor iron stain. Tidal flat, pro-deltaic, and mid-basin deposits are represented in the thinly bedded marine shales and siltstones facies (Stott, 1973). Thin, fine-grained sandstones with ironstone banding were also found during mapping.

The formation varies in thickness from 225 to 350 metres and is very well exposed throughout the property. Its contact with the underlying Monteith Formation forms the majority of the peaks and the ridges that lie within the property.

5.2.2.3 Monach Formation

The Monach Formation represents the top of the Beaudette Group and consists of marine lithic and quartzose sandstones. Thin resistant beds of clean, coarse-grained white quartzites are found at the top, along with minor shales, siltstones and sandstones with occasional thin conglomerates. The quartzose to argillaceous sandstone facies of the Monach Formation represents delta-front deposits (Stott, 1973).

This formation conformably overlies the Beattie Peaks Formation and varies in thickness from 125 to 350 metres. Exposures of the formation are widespread throughout the property due to its resistance to erosion.

5.2.3 Crassier Group

The Crassier Group, of Lower Cretaeous age, represents a period of coal measure deposition. It is subdivided into three formations: the Brenot, Dresser, and Gething Formations (Hughes, 1964).

From the eastern foothills west to Mt. Bickford in the Pine Valley, the formations of the Crassier Group are more clearly differentiated than west of Mt. Bickford where the greater structural complexity combined with the similarity of lithologies makes it increasingly difficult to distinguish between these formations. (Hughes, 1964).

Crassier strata cover most of the Goodrich Coal Property and form many of the valleys in which the drainage systems are located.

The group varies in thickness from 750 to 1300 metres because of depositional factors and associated facies changes primarily associated with the Dresser and Cadomin relationship described in Section 5.2.3.2.

5.2.3.1 Brenot Formation

The continental strata and the coal measures that overlie the Monach Formation were first recognized by J.E. Hughes in 1964. He proposed that these strata be called the Brenot Formation.

The upper part of the Brenot Formation consists of salt and pepper, very fine to fine-grained sandstones, and coal. Carbonaceous mudstones, dark grey siltstones, thin coals, and occasional medium-grained sandstones comprise the lower part of the formation. The formation differs from the overlying Gething in its greater proportion of sand and silt, thinner bedding and general lack of plant fossils.

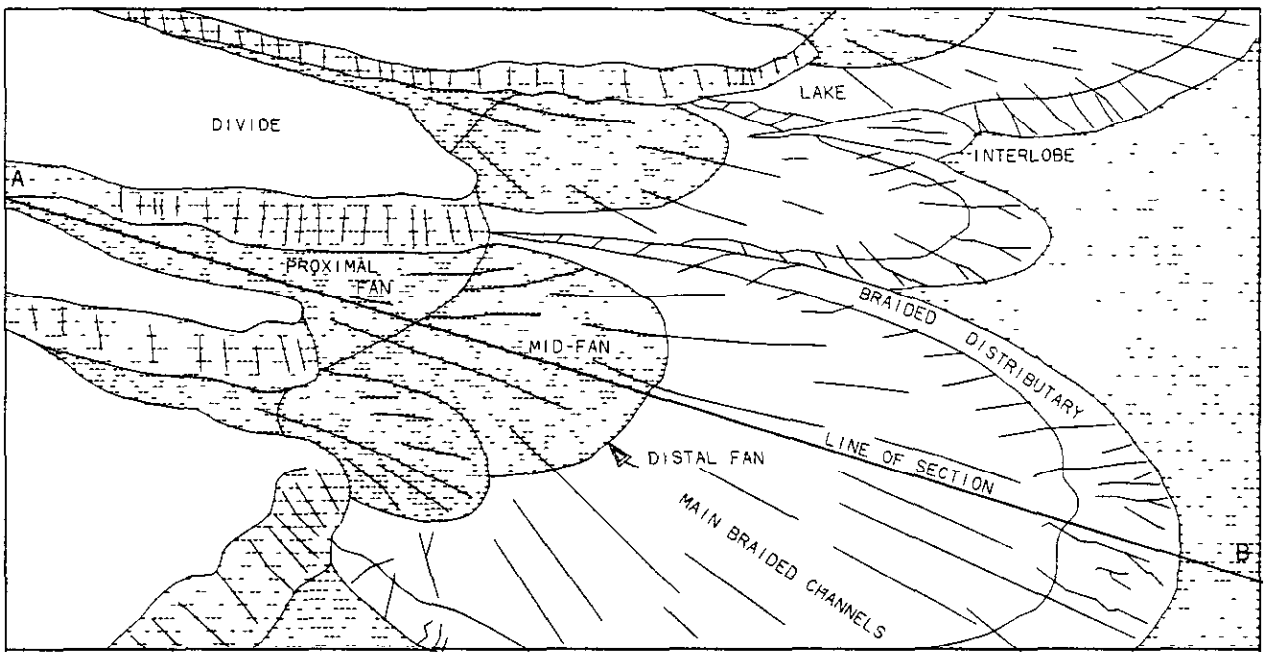
The Brenot Formation varies in thickness from 150 to 500 metres, and is exposed over the entire property. Maximum exposure of the formation occurs in the area between the Pine and Burnt Rivers.

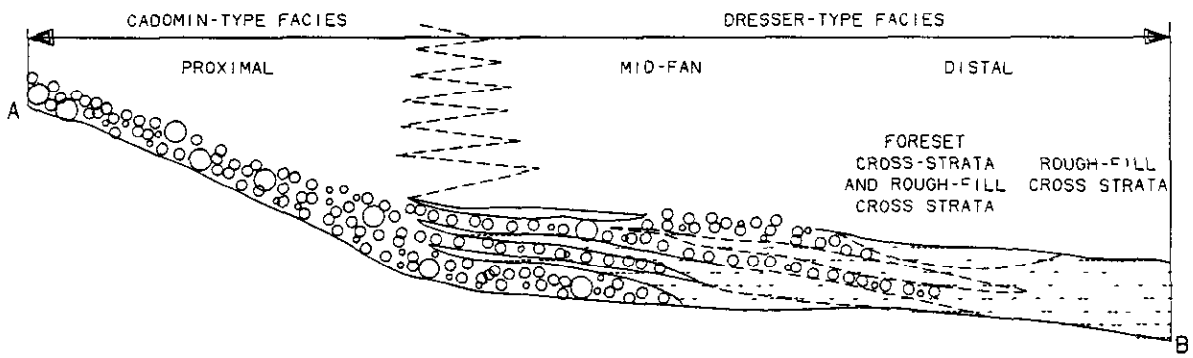
In the Brenot Formation, coal seams have been found in the Goodrich East, Goodrich Lossan, and Goodrich South mapping blocks. The seams occur in the upper and middle Brenot in the north and in the middle and lower Brenot in the south. The thickest seam identified to date is a seam in the Goodrich South area which contains 2.65 metres of coal without rock partings. The Brenot coal seams appear to be fairly clean with only minor rock bands. Vitrinite reflectance analyses of coal seam trench samples from the

FIGURE 5.2.3.2.1

GOODRICH COAL PROPERTY

ALLUVIAL FAN MODEL





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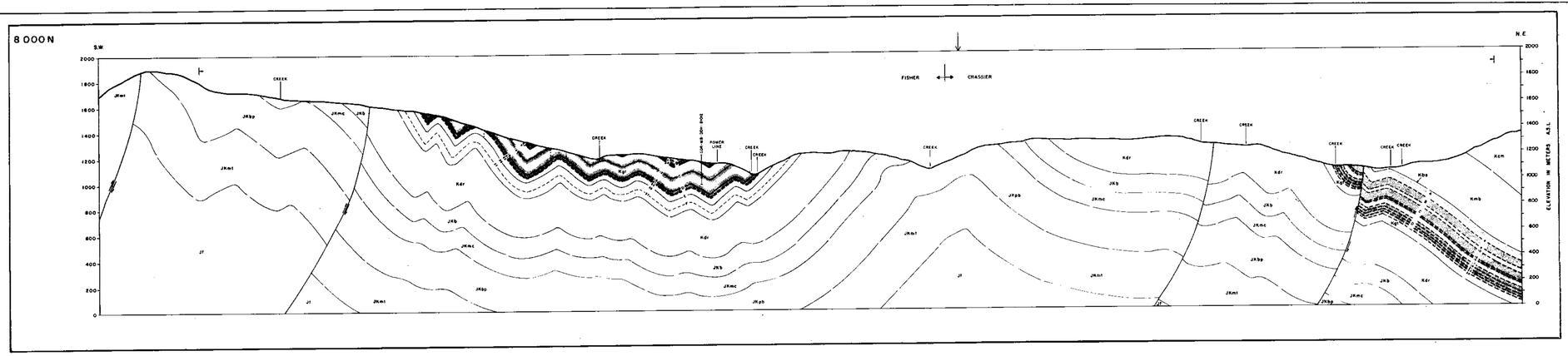
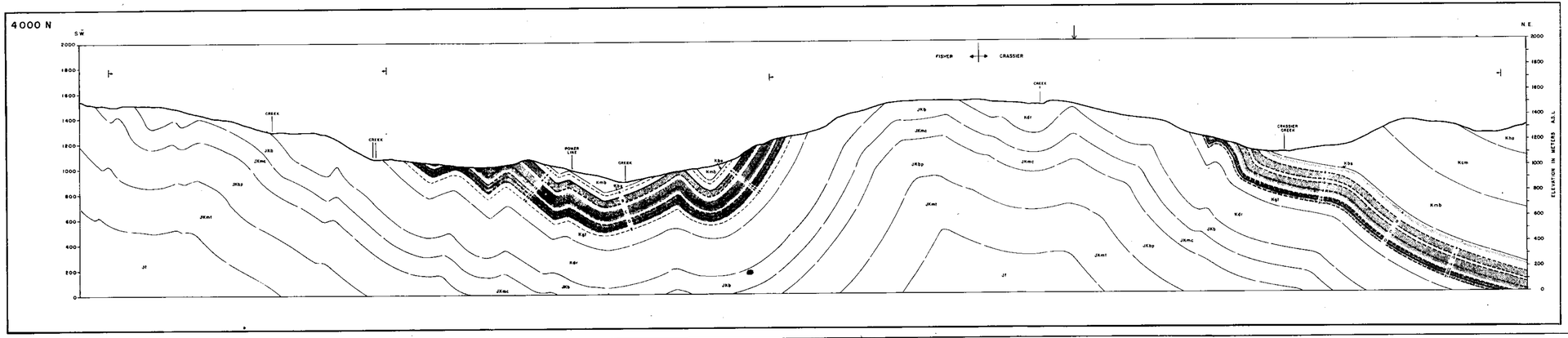




LEGEND

UPPER CRETACEOUS / LOWER CRETACEOUS TRANSITIONAL / JURASSIC

FORT ST. JOHN GROUP — CRASSIER GROUP — BEAUDETTE GROUP

- **Q** — *QUATERNARY*
  Glacial deposits & alluvium
- **Kcr** — *CRUISER FORMATION*
  Mudstone, siltstone
- **Kgd** — *GOODRICH FORMATION*
  Sandstone, minor conglomerate, siltstone, mudstone
- **Kha** — *HASLER FORMATION*
  Mudstone, siltstone, thin sandstone
- **Kcm** — *COMMOTION FORMATION*
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- **Kmb** — *MOOSEBAR FORMATION*
  Mudstones, minor siltstones, marine
- **Kbs** — *BLUESKY*
  Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- **Kgt** — *GETHING FORMATION*
  Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit; COAL
- **Kdr** — *DRESSER FORMATION*
  Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates
- **JKb** — *BRENOT FORMATION*
  Lithic salt & pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- **JKmc** — *MONACH FORMATION*
  Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- **JKbp** — *BEATTIE PEAKS FORMATION*
  Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- **JKmt** — *MONTEITH FORMATION*
  Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- **Jf** — *FERNIE FORMATION*
  Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

GEOLOGICAL CONTACT

FAULT

COAL SEAM
INTERSECTION/EXPOSURE, PROJECTED

SCALE
0 — 1000 — 2000
METRES

FIGURE 5.4.2.1

GOODRICH COAL PROPERTY

MOBERLY PROSPECT

GEOLOGICAL CROSS SECTIONS

8 000N & 4 000N

01/12/83

Gulf

Goodrich South Cirque area indicate that the coal is of high volatile bituminous rank.

5.2.3.2 Dresser Formation

The Dresser Formation of the Lower Cretaceous Crassier Group conformably overlies the Brenot Formation, and its upper contact with the Gething Formation is gradational.

On the Goodrich Coal Property, the formation consists of medium to very coarse-grained sandstones, grits, predominantly chert pebble conglomerates and discontinuous coal measures of varying thickness, with the conglomerate strata more predominant in the upper part of the formation.

The conglomeratic strata is referred to as the Cadomin Formation by Stott (1965) and the underlying sandstones, siltstones, and coal measures referred to as the Bickford Formation (Stott, 1981). The relationships in nomenclature are illustrated in Table 5.2.2 The Cadomin is essentially equivalent to the top of the Dresser Formation as described by Hughes (1964) and the clastic sediments described by both authors have been deposited in a series of alluvial fans (Bajada-like distribution) as shown in Figure 5.2.3.2.1. According to the descriptions of these formations by both authors, the Cadomin Formation falls within the proximal to mid-fan region, whereas the Dresser Formation falls within the distal part of the fan.

The Dresser Formation is very resistant to erosion, therefore the exposures are widely distributed throughout the property. The thickness of the formation varies from 250 to 300 metres, although gradational changes to overlying and underlying formations make thickness determinations approximate only.

Coal seams in the formation have been found and trenched in the Moberly, Goodrich Central and East blocks. These generally occur in the upper part of the formation. The coal/coal plus rock ratios range up to 3.08 m/3.81 m. (GDR-GC-TRC-81017). The seams thicken and contain fewer rock bands toward the north.

5.2.3.3 Gething Formation

The Gething Formation, predominantly non-marine, conformably overlies the Dresser Formation. and underlies the Bluesky Formation of the Fort St. John Group. It consists of multiple fining upward cyclothems that strongly suggest a fluvial environment.

The Gething Formation is distinguished from the Brenot Formation by its greater proportion of shales and plant fossils and the numerous coal measures. It consists of dark grey mudstones; siltstones; lithic, very fine to course-grained

sandstones; carbonaceous, silty and sandy mudstones; coalified plant debris; minor bentonite, black shale; occasional minor tuffs in the middle and upper parts; and coals. The sandstones in the upper portion of the formation contain pebbles and coal stringers. They are cross-bedded, bioturbated, and show evidence of soft sediment deformation. Fossil bivalves and worm burrows are also found in some parts of the formation. The formation varies in thickness from 350 to 500 metres.

In the Gething Formation, coal seams have been found and trenched throughout the whole of the Goodrich Coal Property, many over one metre in true thickness. Coal/coal plus rock ratios range from 0.5 m / 0.5 m in thickness up to 7.26 m/9.72 metres true thickness (GDR-GS-TRC-82041). Figure 5.4.2.3 illustrates a measured section of typical Gething strata from the Moberly prospect area.

5.2.4 Fort St. John Group

The Lower Cretaceous Fort St. John Group of the Inner Foothills includes the Bluesky, Moosebar, Commotion, Hasler, Goodrich, and Cruiser Formations. Both the marine and the non-marine strata exhibit the vertical and lateral facies changes which are characteristic of the group (Stott, 1960).

The Bluesky and Moosebar are the only two formations of the Fort St. John group that outcrop in the central region of the Goodrich Coal Property. The Commotion, Hasler, and Goodrich Formations outcrop only along the northeastern boundary of the property in the Moberly area.

5.2.4.1 Bluesky Formation

The Bluesky Formation represents the basal unit of the Fort St. John Group in northeast British Columbia. The formation consists of fine to medium-grained glauconitic sandstone, mudstone, and thin to thickly bedded, very coarse conglomerates having well rounded quartzite pebbles up to 15 cm across. According to R.H. Karst et al, 1979, the Bluesky represents shoreline deposits formed during the rapid southward transgression of the Clearwater Sea.

The Bluesky Formation varies in thickness from 2 to 5 metres in the Lossan Mine Area to up to 15 metres thick in the Moberly prospect area. The formation is exposed in several areas along the limbs of

the Lossan and Axis synclines in the Lossan Mine Area, as well as along the east limb of the Fisher syncline, and in creek cuts in the Moberly area.

The Bluesky has previously been considered to be equivalent to the upper beds of the Gething Formation (Stott, 1965). On the Goodrich Coal Property, however, Gulf's geologists have given the Bluesky formational status as it is a surface mappable unit and it maintains a consistent geophysical log response.

5.2.4.2 Moosebar Formation

The Moosebar Formation, one of the youngest formations exposed on the property, consists of dark to medium grey sandstones, grading upward to dark grey siltstones. Highly glauconitic beds occur near the base of the formation at its contact with the Bluesky.

The upper beds of the Moosebar are gradational and the upper boundary with the Commotion Formation is drawn at the base of the first thick succession of sandstone.

In the Lossan Mine Area, one drill hole (GDR-DDH-81-02) intersected approximately 270 metres of the Moosebar. As many as six tuff bands up to 10 cm in thickness have been identified in the core and on the geophysical logs. Five of these bands are con-

tained within an interval of 20 to 30 metres above the Moosebar-Bluesky contact. It is believed that these tuff bands could be valuable in correlation work.

Exposure of this formation is limited, due to its recessive nature. South of the Pine Valley, the main exposure occurs in Axis Creek, a tributary of Brazion Creek. North of the Pine Valley, the formation is exposed along Fisher Creek, Crassier Creek, and north of the Moberly River in the Moberly prospect area.

5.2.4.3 Commotion Formation

The Commotion Formation was defined by Wickenden & Shaw (1943) as a succession of sandstones, shales, and conglomerates, followed by thin coal measures conformably overlying the Moosebar Formation. The Commotion Formation is composed of four distinct members: the Gates, Hulcross, Boulder Creek, and the Walton members.

Reclassification of the Gates, Hulcross and Boulder Creek members to formation status within the Fort St. John Group has recently been reported by McLean (GSC; Report No. 29). To maintain consistant reference to previous stratigraphic nomenclature and simplify construction of geological cross-sections, for the purposes of this report the Gates, Hulcross, Boulder Creek and Walton will be referred to as members of the (now non-existent) Commotion Formation.

The Commotion Formation was not mapped in great detail in the Goodrich area, because exposure of the formation is limited and generally occurs outside of the licences' northeastern boundary. Gulf's Trefi Coal Property contains coal within the Walton member of the Commotion Formation.

5.2.4.4 Hasler Formation

The marine Hasler Formation consists of thinly interbedded and interlaminated grey siltstones, claystones, and shales, with minor sandstones. The formation was defined by Wickenden & Shaw (1943) as those shales overlying the Commotion Formation. The formation varies in thickness from 320 to 520 metres and is exposed outside and along the northeastern part of the property, where detailed mapping was limited by heavy ground cover and poor exposure.

5.2.4.5 Goodrich Formation

The Goodrich Formation consists of sandstones, occasional conglomeratic sandstones, siltstones, claystones, and a few thin coals. The formation varies in thickness from approximately 150 to 250 metres. The lower portion of the formation is characterized by a number of cliff-forming sandstones, which become increasingly thicker from the base upwards. The contact with the underlying Hasler Formation is defined as the first sandstone in excess of 0.5 metres.

The Goodrich Formation is the youngest formation exposed on the Goodrich Coal Property. It forms limited outcrops along the northeastern boundary of the licences in the Moberly prospect area.

5.3 Regional Structure

The Goodrich coal licences overlie several distinct structural trends in the northeast portion of the Peace River Coalfield. The structures trend in a northwesterly direction and each major structure contains strata which have been folded and faulted into a series of synclines and anticlines. (Figure 5.3.1).

Fold styles on the Goodrich Coal Property are characterized by tight asymmetrical chevron folding in the western regions and gentle box fold styles towards the eastern margins (Moberly and Table Areas). Major stresses and pressures originated from the west resulting in greater deformation in the western half of the property. The thickness of interbedded competant and incompetent strata is a major factor in determining the degree of the lambate-cuspate or chevron folding. (Figure 5.3.2).

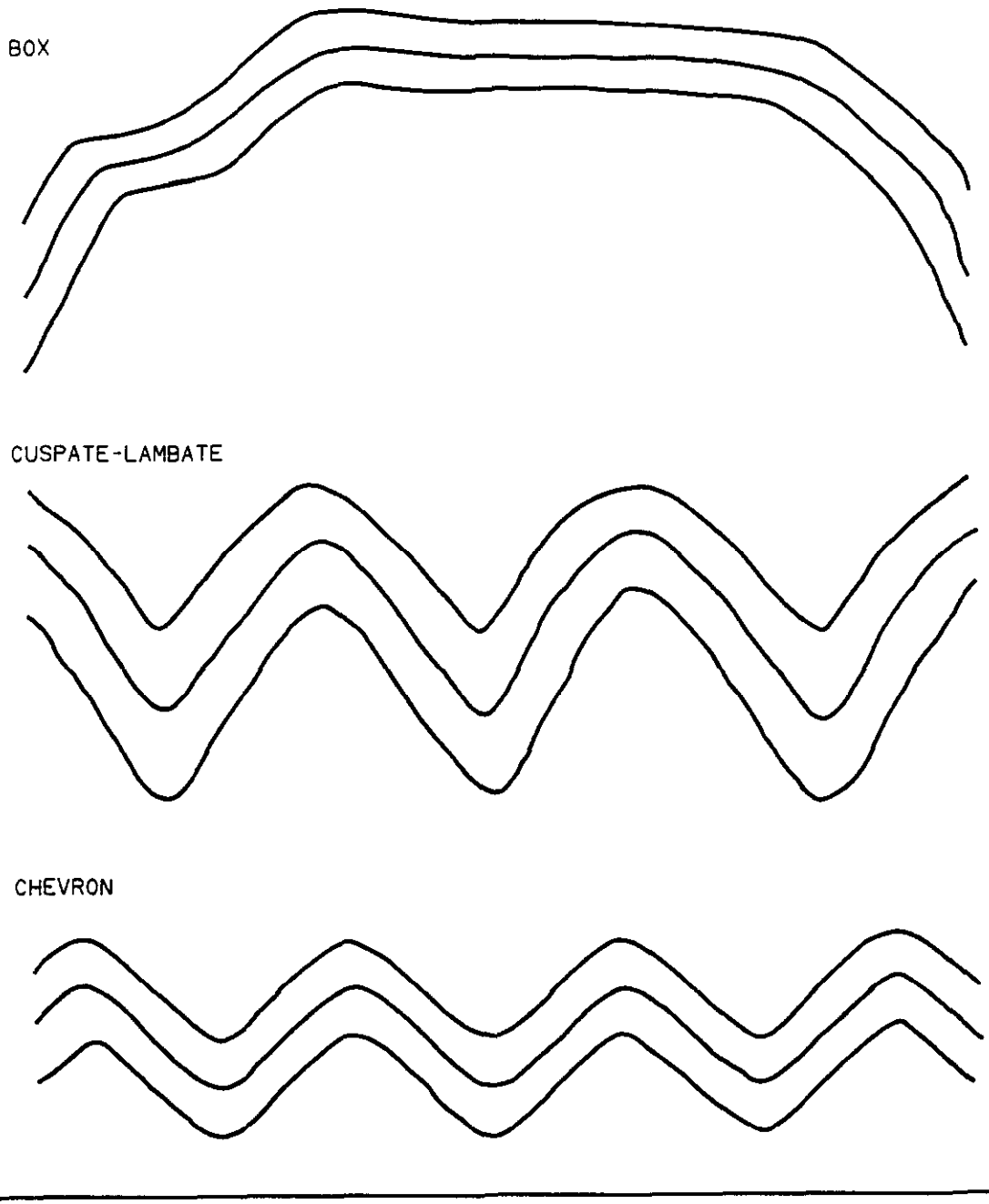
Drilling to date has indicated that generally thicker than normal intersections of coal are found in the axes of many of the more tightly folded synclines on the property.

Several major thrust faults on the property displace strata up to 300 metres. These are generally high angle west dipping faults which parallel the regional northwest structural trends. In addition, a number of relatively small scale faults (10 to 15 metres displacement) have been defined. These smaller thrust faults are generally associated with the crests and troughs of folds and result in the repetition of coal seams.

FIGURE 5.3.2

GOODRICH COAL PROPERTY

SCHEMATIC DIAGRAM ILLUSTRATING FOLD STYLES



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5.4 Moberly Prospect

5.4.1 Summary

Situated in the northeast quadrant of the Goodrich Coal Property, the Moberly Prospect lies on the eastern margin of the Inner Foothills of the Rocky Mountains.

Broad, box-type synclinoriums and anticlinoriums and minor southwest-dipping thrust faults expose strata from the Jurassic-Cretaceous Monteith Formation to the Cretaceous Goodrich Formation, the youngest formation exposed on the property. (Figure 5.4.1.1)

Diamond drilling and hand trenching undertaken during the 1983 exploration program confirmed the presence of six coal zones within the Gething Formation. These zones contain a total of at least 27 coal seams. An average aggregate thickness of over 28 metres of coal has been measured in 17 of those seams. (Figure 5.4.4.1).

Coal measures of the Dresser and Brenot Formations have also been located and trenched in the Moberly Prospect, but the economic potential of these coal seams has not been identified.

FIGURE 5.4.11

GOODRICH COAL PROPERTY

MOBERLY PROSPECT

GEOLOGY

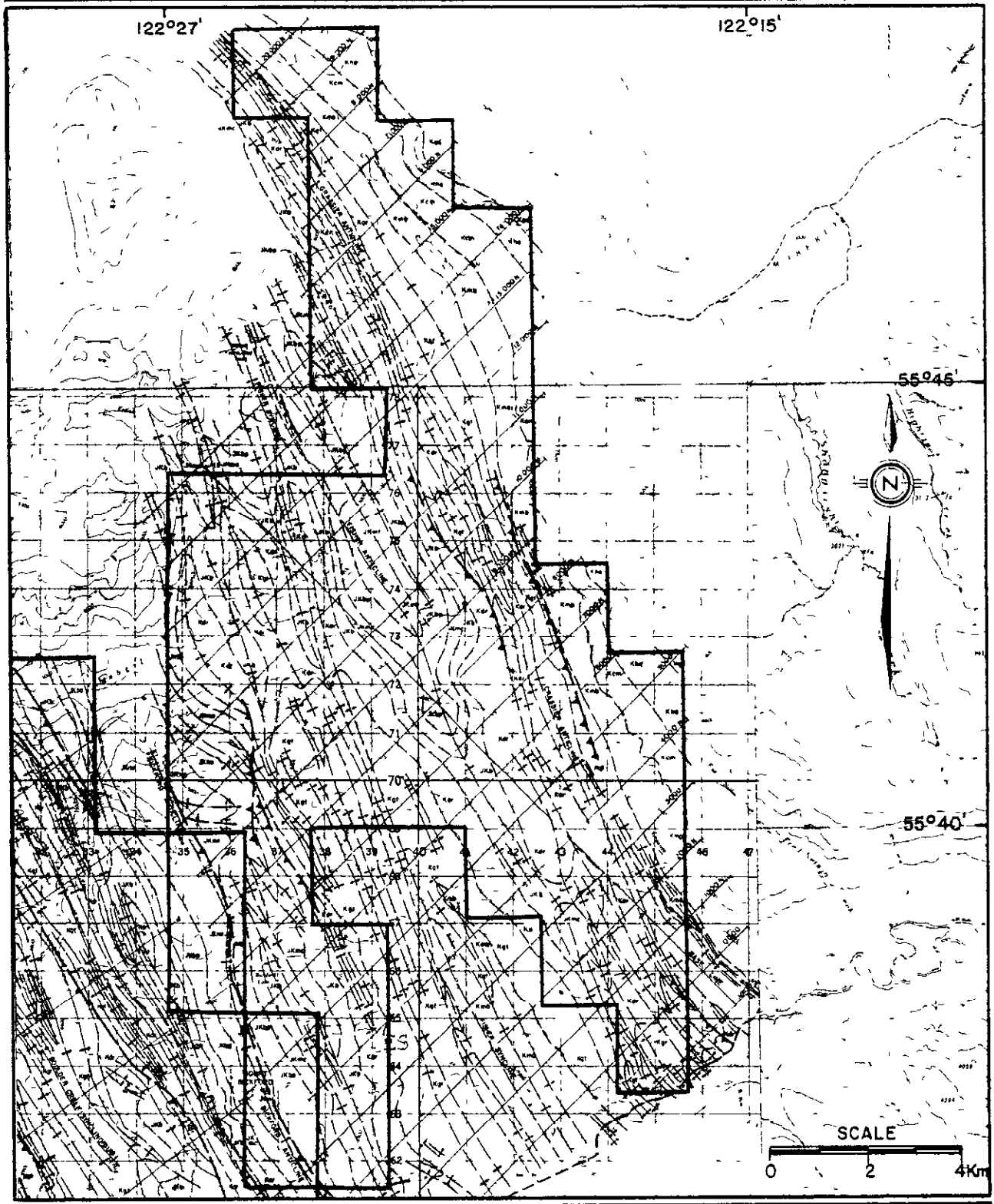


TABLE OF FORMATIONS

Kcr	Cruiser	Kdr	Dresser
Kgd	Goodrich	JKb	Brenot
Kha	Hasler	JKmc	Monach
Kcm	Commotion	JKbp	Beattie Peaks
Kmb	Moosebar	JKmt	Monteith
Kbs	Bluesky	Jf	Fernie
Kgt	Gething		

GEOLOGICAL SYMBOLS

- Coal Seam Subcrop
- Geological Boundary (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx position of fault)
- Cross Section Location

Gulf

5.4.2 Stratigraphy

Strata of the Jurassic-Cretaceous Monteith Formation to the Cretaceous Goodrich Formation are exposed over the Moberly Prospect. The older non-coal-bearing formations are topographically expressed on ridges whereas the coal-bearing formations of the Crassier Group are generally exposed along slopes and in the valleys of the prospect area as shown in Figure 5.4.2.1

Unlike the remainder of the Goodrich Coal Property, the Moberly Prospect contains younger Fort St. John Group strata which are exposed along the eastern margin of the region. Although the Commotion Formation of this group is coal-bearing further east on Gulf's Trefi Coal Property, it is not of economic significance in the Moberly Area.

The thicknesses of the Crassier and Beaudette Group formations in this area are generally less than in other areas of the Goodrich Coal Property as indicated in Table 5.4.2.1

The Bluesky Formation is an exception to the regional thinning trend as it attains thicknesses of up to 15 metres in the Moberly area. In other areas of the property where the formation has been identified, it attains thicknesses of 2 to 5 metres and consists mainly of fine to medium grained sandstone. In the Moberly area, however, the Bluesky marks

Table 5.4.2.1

FORMATION THICKNESS VARIATION
OVER THE GOODRICH PROPERTY

Area	Formation (Thickness in metres)					
	Bluesky	Gething	Dresser	Brenot	Monach	Beattie Peaks
Moberly	7-15	390-450	300	150	150	300
GDR Central	-	450-500	300	450-200 S-N	225-150 S-N	250-350 S-N
GDR Lossan	2-5	450-500	300	400-450	250	250
GDR East	2-5	450	300	500	200	300
Table	-	-	300	500	200	300
GDR South	-	-	400	500	200	300

Formation Thickness Variation

the top of the Gething Formation in many places and forms a large dip slope of conglomerate. This is especially apparent along the eastern flank of the Crassier Anticline, west of Crassier Creek. The conglomerate unit weathers light grey with some scarlet stain common, and usually consists of matrix supported clasts although some beds are orthoconglomeratic. Clasts are subangular to round, grey to black, brown, and varicoloured chert with minor quartzite, ranging up to 15 cm in diameter. The matrix contains silt to sand and grit-size constituents. Occasional lenses and interbeds of light grey sandstone with faint bedding are seen in isolated outcrops of the Bluesky Formation in the Moberly area. Diamond drill hole GDR-MB-DDH-83001 intersected 5.86 metres of the formation at the top of the hole; geophysical logs located in Appendix B demonstrate the characteristic response of a conglomerate unit.

Underlying the Bluesky, the predominantly non-marine Gething Formation contains significant and potentially economic coal in strata which cover a large portion of the Moberly licences. The coal measures generally outcrop in creeks and along power line access roads where construction has exposed bedrock.

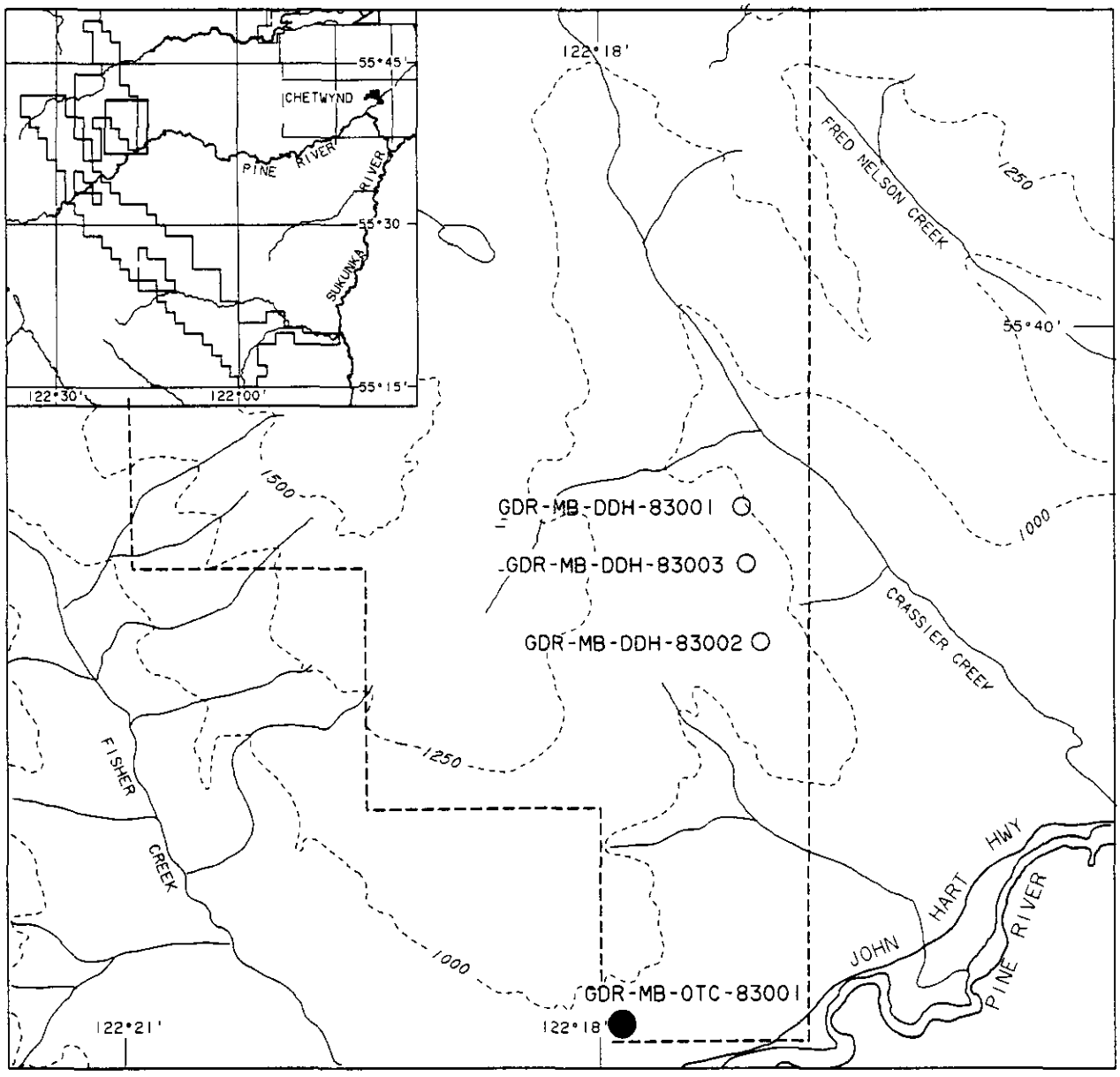
Data collected from drilling, mapping, trenching, and section measurement has suggested that the Gething Formation varies from approximately 450 metres to 390 metres in thickness, in an easterly direction, between Fisher and Crassier Creeks (Figure 5.4.2.1).

During the 1983 exploration program, a complete section of Gething sediments was measured in the southeast region of the Moberly area (Figure 5.4.2.2 & 5.4.2.3). This provided firm evidence for the expected Gething thicknesses and contributed to the correlation of the coal horizons delineated within this formation in the Moberly Prospect area. (Figure 5.4.4.1)

FIGURE 5.4.2.2

GOODRICH COAL PROPERTY

MEASURED GETHING SECTION LOCATION



●	MEASURED SECTION LOCATION
○	DRILL HOLE LOCATIONS
------	GULF LICENCE BOUNDARY
~~	SURFACE CONTOUR (m)

SCALE:

0 — 2 km

Gulf

FILE NAME 0S0:[205.571830998005.LOC.]... 20/10/83

5.4.3 Structure

The Moberly Prospect area contains northwestly trending structures characteristic of the eastern margin of the Inner Foothills of the Rocky Mountains. Broad box-type clinoriums and southwest-dipping thrust faults are found in the area.

The faults have been found to be of minor importance in the coal-bearing regions as they do not extend over long distances, and the displacements on these fault zones reach a maximum of only 250 metres (Cross section 20 000 N, Appendix A). A major fault lying to the east of the Bickford Anticline attains significant displacements but lies entirely outside of the region of potentially surface mineable resources.

There are three major folds in the Moberly Prospect area: The Fisher Anticline and Syncline and the Crassier Anticline. The Bickford Anticline lies at the boundary of the Moberly and Goodrich Central Prospects. These folds generally plunge southeast however the Fisher Anticline undergoes several plunge reversals through the area.

The Crassier Anticline is a major parasitic fold on the larger Fisher Anticline. This fold trends along the eastern region of the Moberly area and exposes younger Dresser and Gething strata at its core. In the region just north of the Pine River Valley, the fold becomes indistinct, as it passes into several smaller folds of the Fisher Anticlinorium.

The Fisher Anticline extends through the central and southeastern regions of the area between the Fisher Syncline and Crassier Anticline exposing predominantly older Crassier and Beaudette Group strata at its core. This structure plunges generally southeast but undergoes minor plunge reversals through the property. The box-fold nature of this anticlinorium can be seen in Figure 5.4.2.1.

The Fisher Syncline extends north and south of the Moberly River, west of the Fisher Anticline, plunging gently to the southeast. The core of the syncline contains predominantly Gething sediments, as shown in Figure 5.4.2.1. The Fisher Syncline is actually a broad synclinorium with numerous discontinuous parasitic folds.

5.4.4 Coal Occurences

In the Moberly Prospect area, the Gething Formation contains potentially economic surface mineable coal seams. Coal has also been found in the Brenot and Dresser Formations, but no seams of economic significance have been observed to date.

A total of 55 coal exposures were measured and logged in the Moberly area during the 1983 exploration program. Fifty-two of these trenches were in the Gething Formation. This brings the total number of trenches in the area to 85 (Table 5.4.4.1).

Table 5.4.4.1

MOBERLY PROSPECT
TRENCH SUMMARY

Data Source (GDR-MB-)	Coal/Coal+Rock (true thickness, metres)	Formation	Licence Number
TRC-83001	0.90/1.51	Gething	5933
2	2.94/3.01	"	5933
3	1.10/1.25	Brenot	5748
4	0.59/0.68	Gething	-
	0.63/0.63	"	
	0.73/1.02	"	
	0.65/0.65	"	
5	0.77/0.77	"	-
	0.82/0.96	"	
	2.29/2.29	"	
	1.15/1.15	"	
	3.23/3.74	"	
6	1.15/1.15	"	-
7	2.83/3.10	"	-
8	2.57/2.57	"	-
9	0.57/0.57	"	-
10	1.38/1.38	"	-
11	0.62/0.62	"	-
12	1.27/1.27	"	-
13	0.79/1.06	"	-
14	0.70/0.70	"	5759
15	1.40/1.40	"	4750
16	0.95/0.95	"	5759
17	2.19/3.16	"	5759
18	2.32/2.57	"	5759
19	1.71/1.71	"	5759
20	0.75/0.75	"	-
21	0.94/0.94	"	-
22	4.12/4.39	"	5758
23	1.40/2.13	"	5759
24	1.98/2.03	"	-
	0.42/0.42	"	
26	1.12/1.55	"	-
27	1.98/2.15	"	-
28	2.21/2.58	"	-
29	0.43/0.43	"	5759
30	1.02/1.02	Dresser	5746

Table 5.4.4.1

MOBERLY PROSPECT
TRENCH SUMMARY
(CONT'D)

Data Source (GDR-MB-)	Coal/Coal+Rock (true thickness, metres)	Formation	Licence Number
TRC-83031	1.11/1.43	Gething	5746
32	0.48/0.70	"	5750
33	2.50/3.07	"	5750
34	1.80/1.85	"	5762
35	1.80/1.80	"	5762
36	1.16/1.16	"	5758
37	3.60/4.34	"	5761
38	4.40/4.65	"	5761
39	0.65/0.65	"	5752
41	4.72/5.50	"	4751
42	5.19/7.94	"	-
	2.15/2.81	"	
	4.38/5.75	"	
43	0.53/0.53	"	4751
44	1.11/1.11	"	4751
45	(8.80/9.24)	"	-
	0.68/0.79	"	
46	0.56/0.56	"	4750
47	1.07/1.07	"	4750
48	0.96/0.96	"	4750
49	0.62/0.62	"	-
50	0.58/0.87	"	-
	0.89/0.89	"	
51	1.16/1.26	"	4750
52	0.62/0.62	Dresser	5762
53	0.69/0.73	Gething	5762
54	4.00/4.00	"	5759
55	0.51/0.65	Dresser	5743
56	1.03/1.03	Gething	4750

Table 5.4.4.1

MOBERLY PROSPECT
TRENCH SUMMARY
(CONT'D)

Data Source (GDR-MB-)	Coal/Coal+Rock (true thickness, metres)	Formation	Licence Number
TRC-82001	1.15/1.15	Gething	5758
2	0.76/0.76	"	-
3	0.65/0.73	"	5750
4	1.10/1.10	Dresser	5746
5	0.21/0.21	Gething	-
6	1.08/1.28	"	-
7	0.79/0.81	Brenot	5762
8	0.51/0.55	Gething	5762
9	0.26/0.26	Brenot	5762
	0.18/0.18	"	
10	1.33/2.18	Gething	5762
11	1.27/1.27	"	5762
12	0.35/0.35	"	5764
13	0.24/0.24	"	5769
14	1.92/1.92	"	5768
15	5.81/6.26	"	-
16	2.38/2.91	"	5759
17	1.82/1.90	Dresser	5759
18	2.45/2.45	Gething	5764
TRC-81001	3.60/4.09	Gething	5759
2	4.94/5.07	"	5759
3	0.86/1.35	"	5764
4	0.57/0.68	"	5764
5	1.25/1.75	"	5758
6	1.52/1.60	"	5758
7	1.05/1.33	"	5761
8	0.74/1.36	"	5761
9	3.91/4.12	"	5761
10	1.88/1.88	"	5761
11	1.02/1.11	"	5761
12	1.00/1.00	"	5764

Where no licence number is recorded, the trench describes a naturally occurring exposure located off the Goodrich coal licences.

Diamond drilling was undertaken during the 1983 exploration program to investigate the coal potential and coal quality in the Gething Formation (Section 5.4.5). The 1983 drill data combined with coal trench data and previous (1981) drilling provided the basis for a correlation of coal seams/zones, the details of which are presented in chart form in Appendix 2.

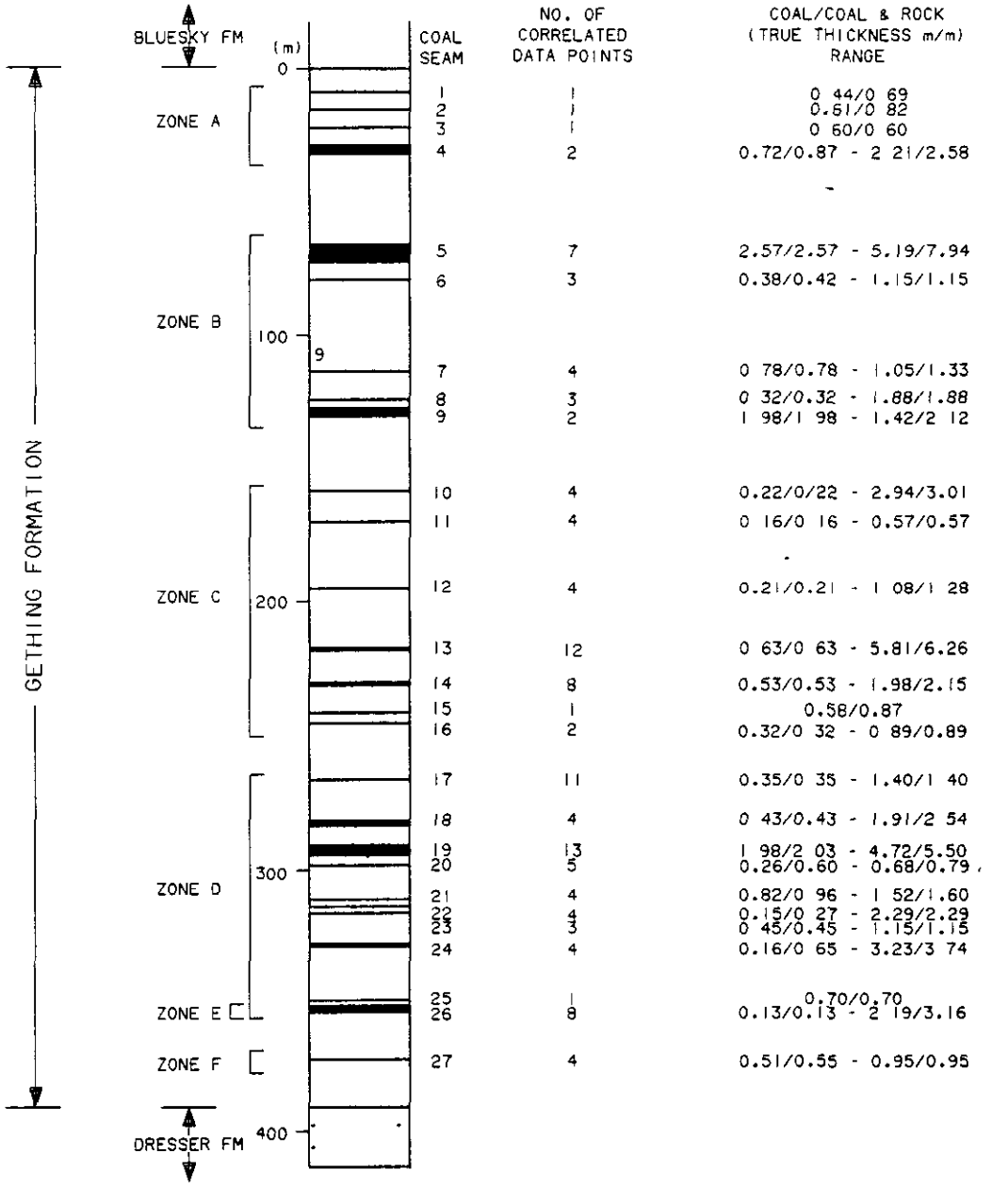
Six coal zones containing 27 separate coal seam intervals have been interpreted within the Gething Formation in the Moberly Prospect area (Figure 5.4.4.1). Although all 27 seams have not yet been found to be present in one area, as many as 17 seams with an aggregate thickness of over 28 metres is not uncommon, as shown in the Coal Seam Data Tables on all cross-sections for the area (Appendix A).

Resource potential of the Moberly Prospect is discussed in Section 6.0.

FIGURE 5.4.4.1

GOODRICH COAL PROPERTY

MOBERLY PROSPECT - GETHING FORMATION
COAL SEAM DISTRIBUTION



COAL SEAM	NO. OF CORRELATED DATA POINTS	COAL/COAL & ROCK (TRUE THICKNESS m/m) RANGE
1	1	0 44/0 69
2	1	0.61/0 82
3	1	0 60/0 60
4	2	0.72/0.87 - 2 21/2.58
5	7	2.57/2.57 - 5.19/7.94
6	3	0.38/0.42 - 1.15/1.15
7	4	0 78/0.78 - 1.05/1.33
8	3	0 32/0.32 - 1.88/1.88
9	2	1 98/1 98 - 1.42/2 12
10	4	0.22/0/22 - 2.94/3.01
11	4	0 16/0 16 - 0.57/0.57
12	4	0.21/0.21 - 1 08/1 28
13	12	0 63/0 63 - 5.81/6.26
14	8	0.53/0.53 - 1.98/2.15
15	1	0.58/0.87
16	2	0.32/0 32 - 0 89/0.89
17	11	0.35/0 35 - 1.40/1 40
18	4	0 43/0.43 - 1.91/2 54
19	13	1 98/2 03 - 4.72/5.50
20	5	0.26/0.60 - 0.68/0.79
21	4	0.82/0 96 - 1 52/1.60
22	4	0.15/0 27 - 2.29/2.29
23	3	0 45/0.45 - 1.15/1.15
24	4	0.16/0 65 - 3.23/3 74
25	1	0.70/0.70
26	8	0.13/0.13 - 2 19/3.16
27	4	0.51/0.55 - 0.95/0.95

VERTICAL SCALE 1:2740

Gulf

5.4.5 1983 Drilling

During the 1983 exploration program three diamond holes, for a total of 400 metres of drilling, were completed in the southeast region of the Moberly Prospect. Inclusion of drill hole GDR-MB-DDH-81012 brings the total drilling in the prospect to 628 metres. All holes have penetrated Gething strata, and samples of significant coal intersections have been taken and analyzed for coal quality (Section 7.0). A summary of 1983 Moberly drilling statistics is presented in Table 4.7.1.

The 1981 and 1983 drilling programs assisted in the correlation of the coal seams in the area. The drill hole correlation is illustrated on the Drill Hole Correlation Chart located in Appendix B. Table 5.4.5.1 and Figure 5.4.5.1 show the distribution of the drill holes with respect to the seams correlated. The 1983 drill hole logs, showing the detail on each drill hole, are located in Appendix B. Geophysical and core logs are also located in Appendix B.

Table 5.4.5.1

MOBERLY DRILL HOLE SEAM CORRELATIONS
(COAL/COAL+ROCK, TRUE THICKNESS, M)

Seam No.	DDH 81012	DDH 83001	DDH83002	DDH83003
1		0.44/0.69		
2		0.61/0.82*		
3		0.60/0.60*		
4		0.72/0.87*		
5	2.71/3.22*	5.41/5.96*		
6	0.45/0.45	0.38/0.42		
7	1.04/1.04*			0.78/0.78 *, **
8	1.70/1.70*			0.32/0.32
9	1.47/2.12*			1.98/1.98*
10	0.22/0.22			1.07/1.07*
11	0.16/0.16			0.21/0.21
12	0.56/0.65*			0.21/0.21
13	1.03/1.08*			
14	0.59/0.93*			
15	carb. zone			
16	0.32/0.32			
17	0.53/0.53*			
18			1.91/2.54*	
19			3.08/3.58*	
20			0.26/0.60	
21			0.91/1.63*	
22			0.15/0.27	
23			0.45/0.45	
24			0.16/0.65	
25			carb. zone	
26			0.13/0.13	
27				

* Used in resource calculations
** Drilling commenced within seam

DRAWN TO SCALE, TRUE THICKNESS

VERTICAL SCALE 1:575

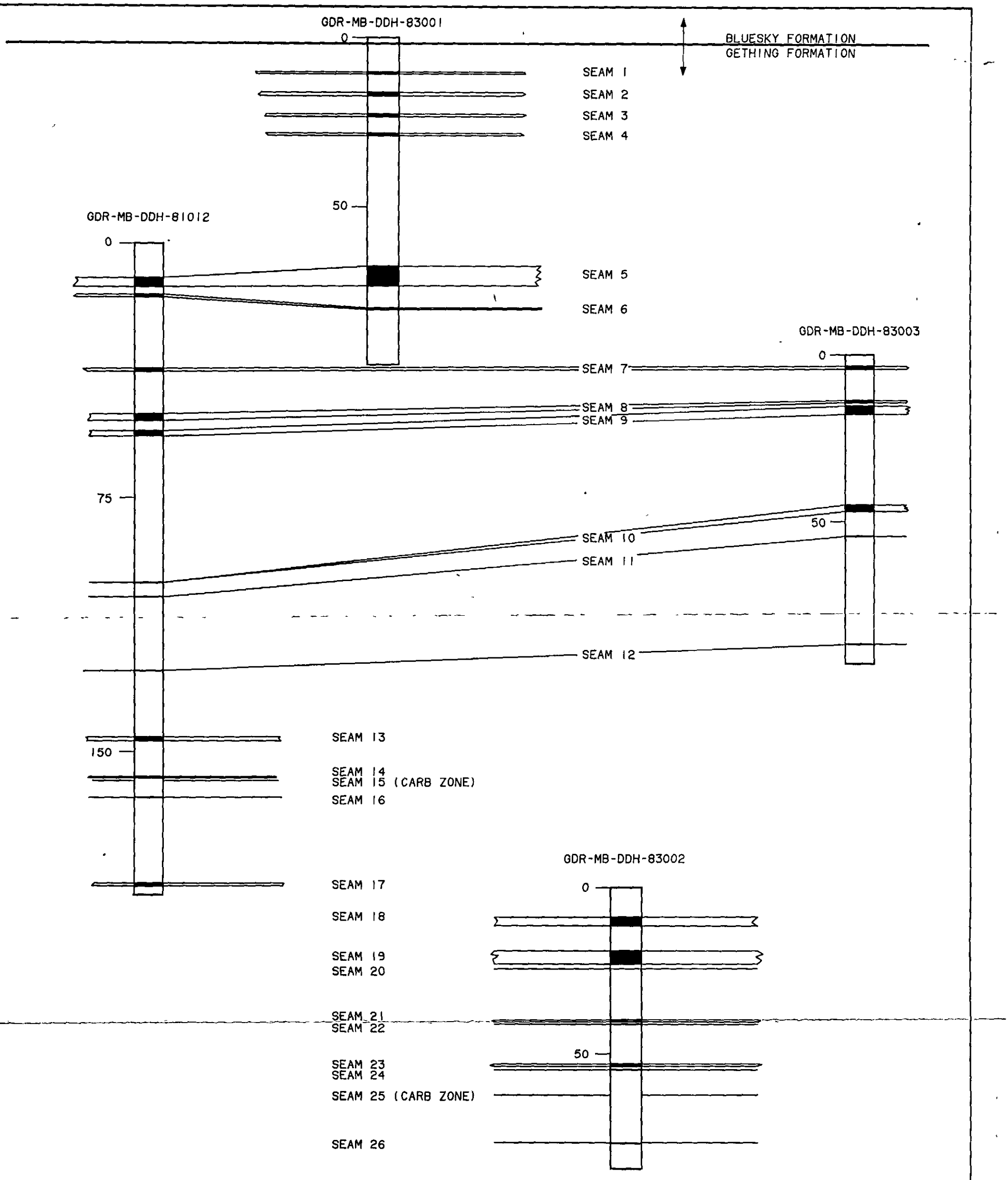


FIGURE 5.4.5.1

GOODRICH COAL PROPERTY

MOBERLY PROSPECT
DRILL HOLE SEAM CORRELATIONS

FILE NAME OSO:[205,57183121000],LOG;1 13/12/83

5.5 Goodrich South - Table Area

5.5.1 Summary

Strata within the Table Area range in age from the Beaudette Group to the younger coal-bearing Crassier Group. Structurally, these formations occur in relatively simple open fold pairs in which the degree of deformation decreases from west to east.

A minimum of 10 distinct coal seams are present within the Brenot, Dresser, and Gething Formations of the Crassier Group. At present, the Gething is the main coal-bearing formation although the Brenot, does display a potential for significant seam development.

5.5.2 Stratigraphy

The Table Area consists of strata ranging in age from the Upper Jurassic-Lower Cretaceous Monteith Formation of the Beaudette Group to the Lower Cretaceous Gething Formation of the Crassier Group. Formation thicknesses are compared with other mapping areas in Table 5.4.2.1. All lithologic descriptions are consistent with those given in Section 5.2 and summarized on Table 5.2.1 of this report.

FIGURE 5.5.2.I.

GOODRICH COAL PROPERTY

TABLE AREA

GEOLOGY

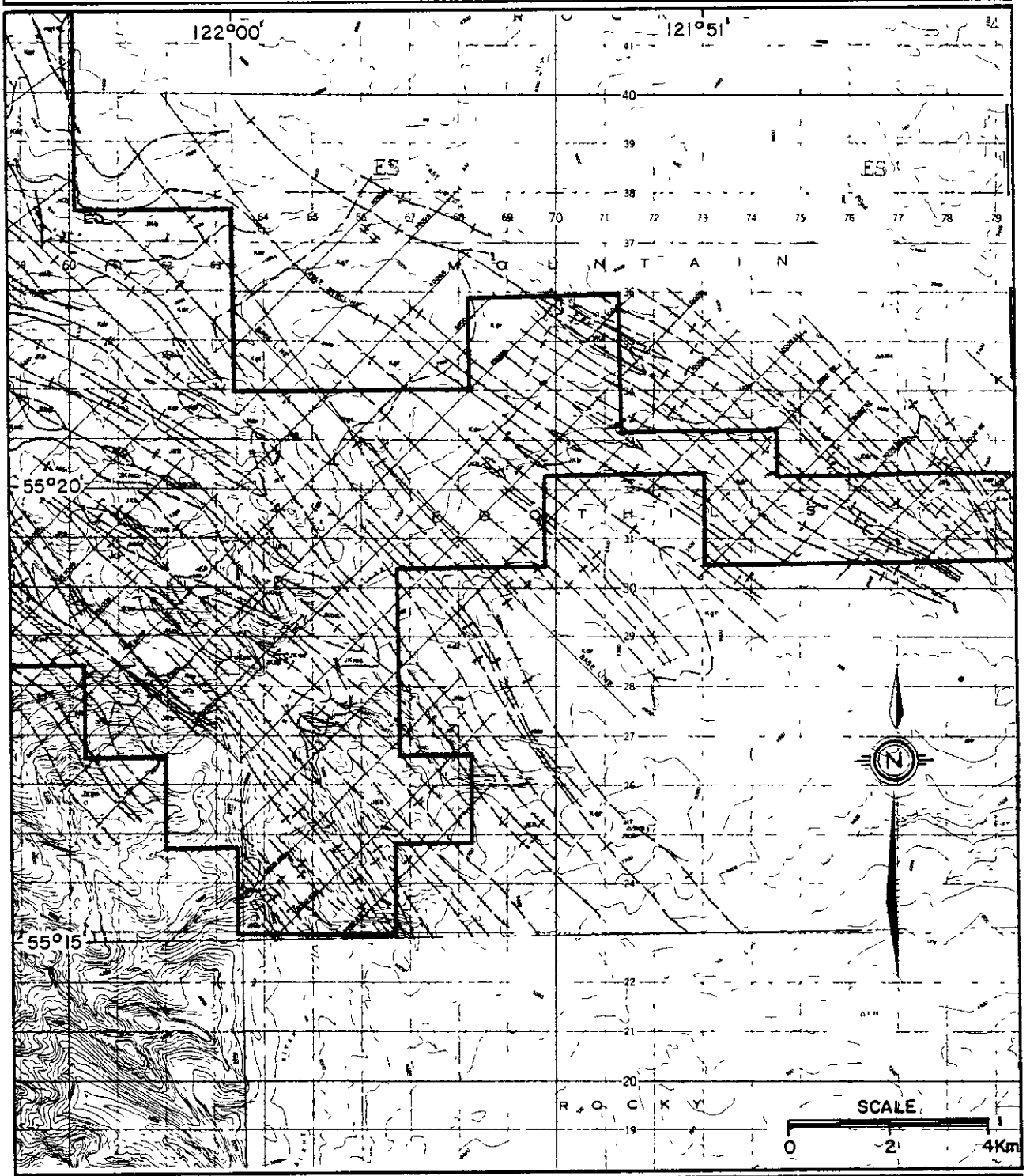


TABLE OF FORMATIONS

Kcr	Cruiser	Kdr	Dresser
Kgd	Goodrich	JKb	Brenot
Kha	Hasler	JKmc	Monach
Kcm	Commotion	JKbp	Beattie Peaks
Kmb	Moosebar	JKmt	Monteith
Kbs	Bluesky	Jf	Fernie
Kgt	Gething		

GEOLOGICAL SYMBOLS

- Coal Seam Subcrop
- Geological Boundary (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx position of fault)
- Cross Section Location

Gulf

Of the coal-bearing Crassier Group, the Brenot and the Dresser Formations cover the majority of the Table Area (Figure 5.5.2.1). The Gething Formation outcrops over a small area in the northwestern extremity of the prospect.

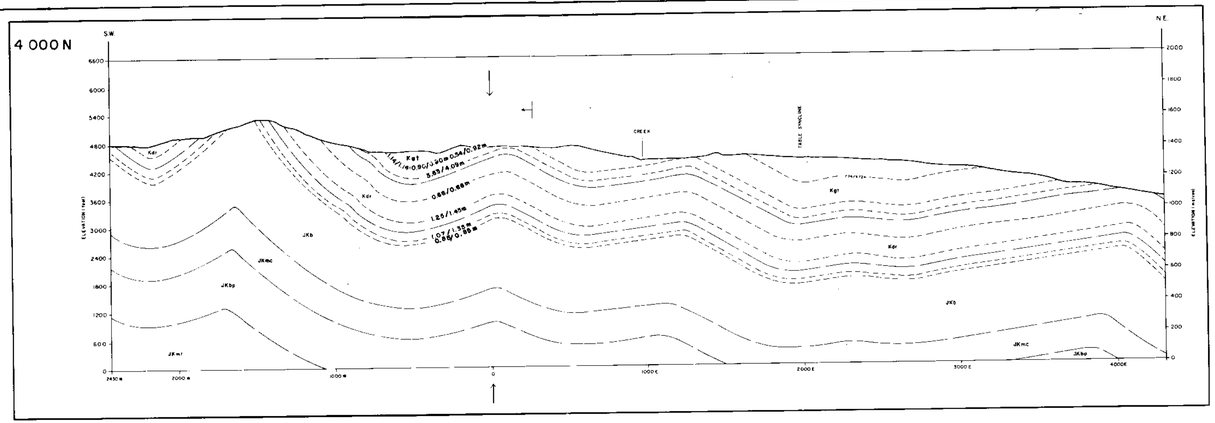
5.5.3 Structure

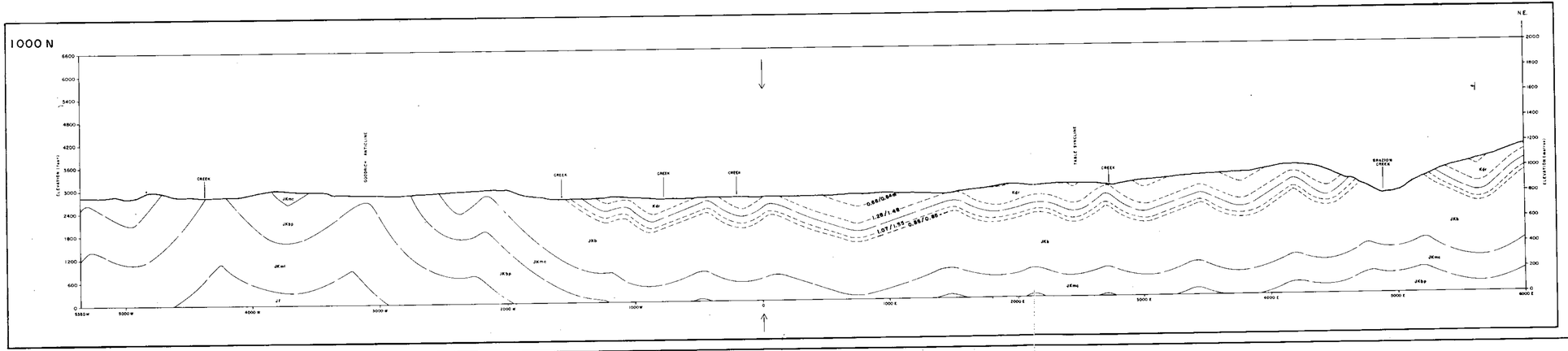
Structurally, the Table Area consists of broad, open northwesterly-trending fold pairs which decrease both in intensity and in amplitude from west to east. A minimum of three gentle plunge reversals are indicated within the mapping area based on seven plunge angles ranging from 4 to 14 degrees.

Two of the major fold structures (Figure 5.5.3.1) are described below:

The Goodrich Anticline lies near the western margin of the Table Area and predominantly exposes strata of the Beaudette Group in its core. To the south, the fold decreases in amplitude and alters in style from asymmetric to symmetric.

The Table Syncline is a broad asymmetric to symmetric fold which decreases in amplitude towards the north. Minor associated folding largely dies out north of the Burnt River. This has resulted in a relatively large exposure of younger Gething sediments on Table Mountain within the core of the syncline.





LEGEND

LOWER CRETACEOUS — TRANSITIONAL — JURASSIC

FORT ST. JOHN — CRASSIER GROUP — BEAUDETTE GROUP

- Q — *QUATERNARY* — Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — *MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
- Kbs — *BLUESKY* — Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — *GETHING FORMATION* — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
- Kdr — *DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — *BHENOT FORMATION* — Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION* — Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION* — Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION* — Dark grey and black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE

0 1000 2000

METRES

FIGURE 5.5.3.1

GOODRICH COAL PROPERTY

TABLE AREA

GEOLOGICAL CROSS SECTIONS

4000N & 1000N

01/12/83

Gulf

Approximately six kilometres separate the Goodrich Anticline from the Table Syncline. Within this area, and further east, numerous symmetrical, low amplitude fold pairs are present.

Thrust faults with displacements up to 150 metres were mapped in 1982 north and northwest of the map area. Subsequent work has indicated that these thrusts do not extend into the Table Area.

5.5.4 Coal Occurrences

Eight trenches were dug during the 1983 field season bringing the total number to 28. Eighteen of these trenches are in excess of 0.5 metres; of which 4 are in the Brenot, 5 are in the Dresser and 9 are in the Gething (Table 5.5.4.1). All 1983 trench data is presented in Appendix C.

Correlations of these trenches have determined that a minimum of 9 coal seams, 0.5 metres or greater in thickness, are present in the Table Area. These seams are shown on all cross-sections and are depicted, in generalized form, in Figure 5.5.4.1.

In the Table Area, the Brenot Formation contains at least 4 coal seams, two of which are 0.5 metres or greater in thickness. The 1982 exploration program indicated that west of the Table, in the South Cirque Prospect, the Brenot contains 11 seams with an aggregate thickness of approximately 18 metres.

It is possible that this abundance of coal measures may extend to the Table Area where there is limited exposure of the Brenot Formation due to overburden.

To date, two coal seams, both of which are greater than 0.5 metres in thickness, are indicated in the Dresser Formation in the Table Area. Coal seam development in this formation does not, as yet, appear to be of economic significance in this area.

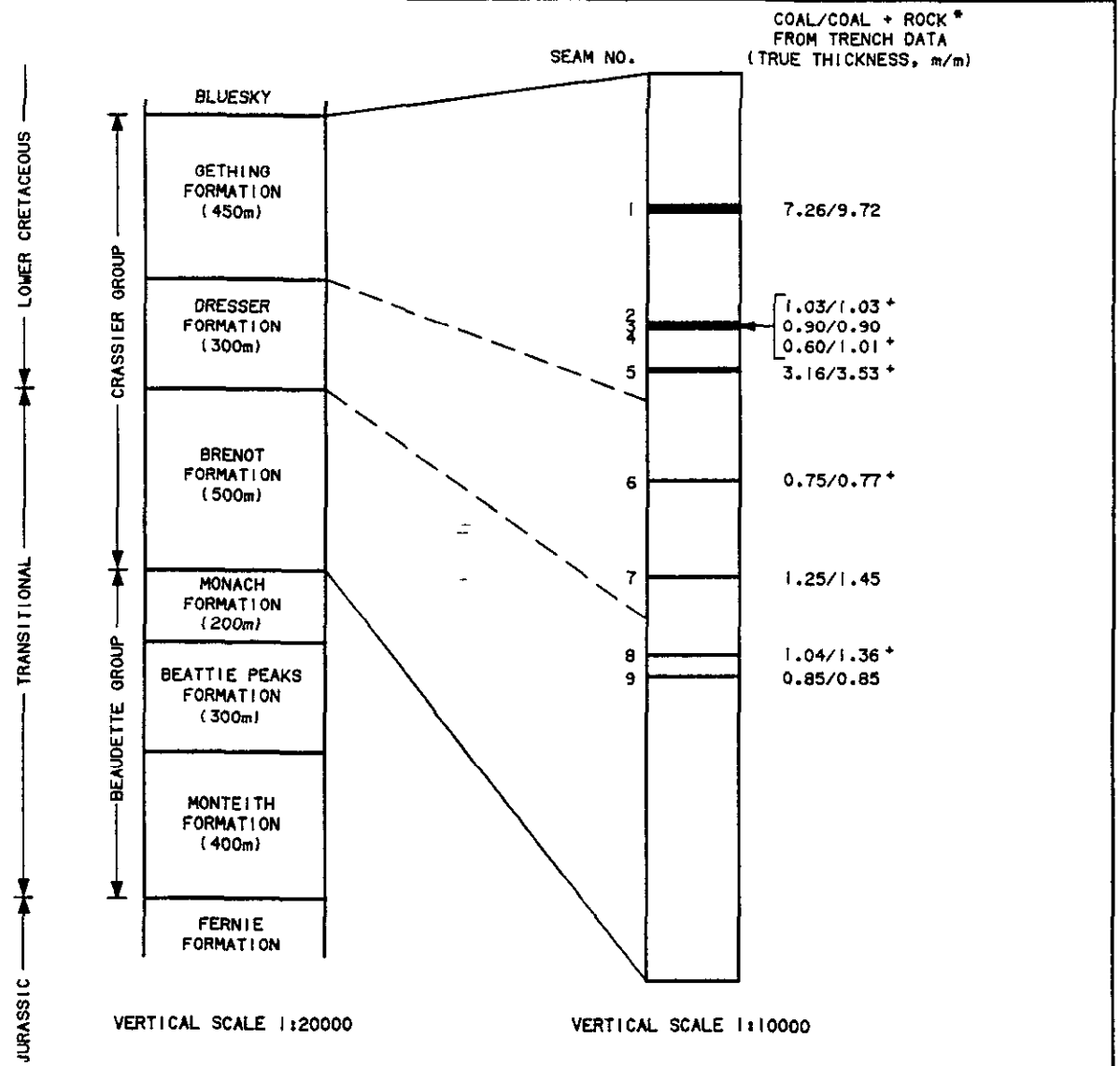
The largest number of coal exposures in the Table Area lie within the Gething Formation. Nine seams have been delineated, five of which exceed 0.5 metres in thickness.

Two seams are of major interest within the Gething in this area. Forty metres above the basal Gething contact lies a seam (TRC 83001 and TRC 83007) with a coal/coal+rock ratio ranging from 2.68/2.96 metres to 3.36/4.09 metres. Two hundred and sixty metres above the basal Gething contact lies TRC 82041 having a coal/coal+rock ratio of 7.26/9.72 metres.

This years' geologic interpretations have reduced the areal extent of the Gething Formation in the Table Area. The resulting resource figures for the area are discussed in Section 6.3 and documented in Appendix 2. The best coal potential in the Table Area is expected to occur within the Brenot Formation. Additional exploration work is required.

FIGURE 5.5.4.1

GOODRICH COAL PROPERTY
TABLE AREA
STRATIGRAPHY AND COAL OCCURRENCES



* ONLY THOSE SEAMS GREATER THAN 0.5 METERS ARE REPRESENTED

\+ AVERAGE VALUE

Table 5.5.4.1

GOODRICH SOUTH-TABLE AREA
TRENCH SUMMARY

Data Source	Coal/Coal + Rock (True Thickness) (metres)	Formation	Licence Number
GDR-GS-TRC 83001	2.68/2.96	Gething	--
83002	0.66/0.66	Dresser	--
83003	0.68/0.68; 0.32/0.32	Dresser	--
83004	0.63/0.71	Dresser	--
83005	1.42/1.84	Brenot	--
83006	1.01/1.01	Dresser	--
83007	3.63/4.09	Gething	6632
83008	0.85/0.85	Brenot	6626
GDR-GS-TRC 82035	0.36/0.46	Gething	--
82037	0.54/0.92	Gething	--
82038	0.36/0.39	Gething	--
82039	0.91/0.91	Gething	--
82040	0.90/0.90	Gething	--
82041	7.26/9.72	Gething	--
82042	1.14/1.14	Gething	--
82044	0.32/0.32;0.43/0.60	Gething	--
82045	0.38/0.38	Gething	--
82048	0.30/0.30;0.65/1.10	Gething	--
82049	1.25/1.45	Dresser	--
82050	0.42/0.42	Brenot	6611
GDR-GS-TRC 81001	0.62/0.89	Brenot	6633
81002	0.37/0.37	Brenot	6633
81003	0.38/0.38	Brenot	6633
81004	0.21/0.21	Brenot	6633
81005	0.36/0.36	Brenot	6633
81006	1.07/1.35	Brenot	6633
81007	0.19/0.19	Brenot	6633
81008	0.22/0.22	Brenot	6633

- where no licence number is recorded the trench describes a naturally occurring exposure located off the Goodrich coal licences.

6.0 COAL RESOURCES

6.1 Summary

Detailed exploration conducted on the Goodrich Coal Property has determined that a total in-situ coal resource potential of approximately 2.64 billion tonnes is present.

Of the seven mapping blocks on the property work in 1983 was restricted to two areas: the Moberly Prospect and the Table Prospect (Figure 4.1.1). Table 6.1.1 summarizes the resources of the three coal-bearing formations with respect to each of the mapping areas. Tonnages for those areas not explored in 1983 have been obtained from the previous years' geological report. (Figure 6.1.1)

Resources determined for the Moberly and Table Prospects are in the order of 958 million and 274 million tonnes, respectively.

Table 6.1.1
SUMMARY OF IN-SITU REGIONAL COAL RESOURCES
OF THE BRENOT, DRESSER, AND GETHING FORMATIONS
(million tonnes)

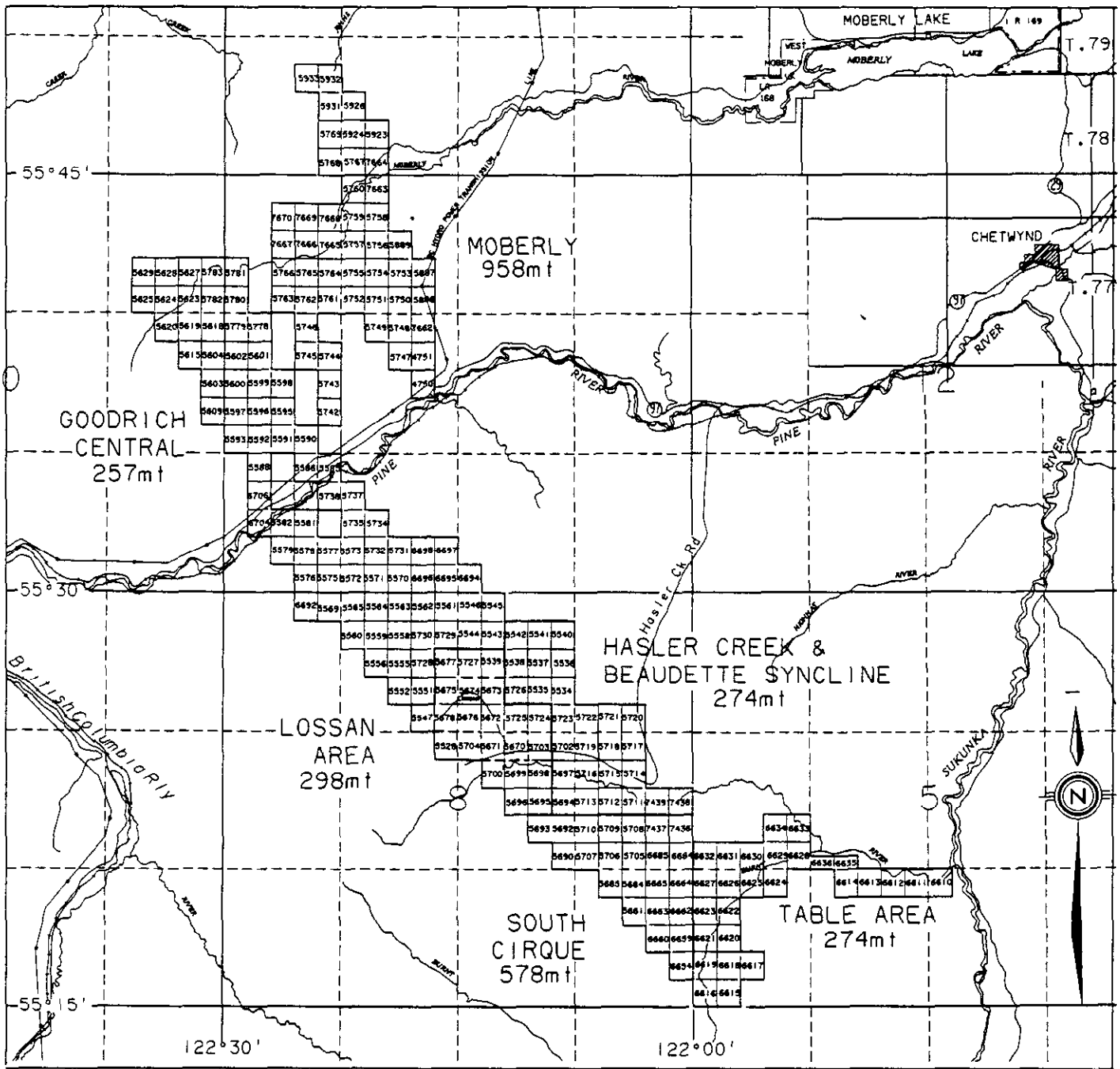
Block	BRENOT FORMATION True Seam Thickness (m) 0.5 -1.0	1.0 -2.0	≥2.0	Sub-Total	DRESSER FORMATION True Seam Thickness (m) 0.5 -1.0	1.0 -2.0	≥2.0	Sub-Total	GETHING FORMATION True Seam Thickness (m) 0.5 -1.0	1.0 -2.0	≥2.0	Sub-Total	ALL 3 FORMATIONS Sub-Total
Moberly	--	--	--	N/C	--	--	--	N/C	201	348	409	958	958
Goodrich Central	--	--	--	--	15	31		61	31	80	84	195	257
Hasler Creek	--	61	--	61	--	--	--	--	33	14	163	210	271
Beaudette Syncline	--	2	--	2	--	--	--	--	--	--	1	1	3
Goodrich South Table	72	80	--	152	12	92	--	104	--	--	18	18	274
Goodrich South Cirque	14	322	186	522	--	49	--	49	--	7	--	7	578
Lossan	--	--	--	N/C	--	--	--	N/C	--	52	246	298	298
												TOTAL RESOURCE POTENTIAL	2,639 mt

N/C: Not Calculated

FIGURE 6.1.1

GOODRICH COAL PROPERTY

REGIONAL COAL RESOURCES



PROSPECTS (million tonnes)	BRENOT	DRESSER	GETHING
SOUTH CIRQUE	522	49	7
TABLE AREA	152	104	18
HASLER CREEK	61	-	210
BEAUDETTE SYNCLINE	2	-	1
LOSSAN AREA	N/C	N/C	298
GOODRICH CENTRAL	-	61	195
MOBERLY	N/C	N/C	958

SCALE

KILOMETRES 0 5 10

N/C - NOT CALCULATED

Gulf

6.2 Parameters

All resource calculations for the 1983 exploration program were calculated on the basis of cross sections spaced at 1000 metre intervals.

Only those seams with a total true thickness of coal of 0.5 metres or greater were considered as potential in-situ resources. Within the Moberly area up to six coal zones are present, the components of which are described in detail on each cross section line. These zones were given averaged seam lengths. Additional specific parameters applied to each data source are outlined in Table 6.2.1.

All resources were calculated to a vertical depth of 500 metres below surface. Oxidation limits were not applied to any of the resources.

All data points were projected onto the nearest cross sections. The maximum width of influence for any section line excepting line 20000N, was 1000 metres. Seams extrapolated through areas of limited surface data were assigned thicknesses from the nearest correlatable trench or drill hole.

A specific gravity of 1.50 g/cc was used in determining coal tonnages. This figure was derived from average specific gravity values on the three 1983 diamond drill holes.

The above comprised the basic parameters on which all resource calculations were completed, according to the following formula:

Tonnes Coal = seam thickness (m) x seam length in section (m) x width of influence (m) x average specific gravity (tonnes/m^3)

Resource calculation tables are located with this text in Appendix 2.

Table 6.2.1

ADDITIONAL RESOURCE PARAMETERS

1. Drill hole data was given preference over nearby correlated trenched seams.

2. Only one coal thickness per seam per structure was applied to each cross section.

3. If trenched seams showed evidence of structural thickening or if deformation of surrounding strata existed, other values, more representative of the same coal horizon, were projected into its place.

4. If seams could not be accurately plotted on the 1:10,000 base maps then these thicknesses were not used.

6.3 Moberly Prospect Resources

Based on the parameters set out in Section 6.2, an in-situ coal resource potential of 957.6 million tonnes has been calculated to exist within the Gething Formation of the Moberly Prospect. The Moberly area contains two major coal-bearing structures: the Fisher Syncline and the Crassier Anticline. Each contains a portion of the total resources as listed below:

Fisher Syncline	171.5	million tonnes
Crassier Anticline	786.1	million tonnes
TOTAL RESOURCE POTENTIAL	957.6	MILLION TONNES

Moberly resource figures are based strictly on the Gething coal measures as defined by trench and drill hole data. Additional seams are recognized in the Brenot and Dresser Formations but were not the focus of studies in this years' Moberly program. For this reason resources have not been calculated for those formations.

The four drill holes to date confirm the fact that coal seams exist throughout the Gething, as indicated on the Moberly geological cross sections (Appendix A). Seams used in the resource calculations varied in coal/coal + rock values from 0.53/0.53 metres to 5.19/7.94 metres. All seams in excess of 1.0 metre are presented on each of the Moberly cross sections in the form of lines; the shaded zone indicates the presence of seams greater than 0.5 metres.

6.4 Table Area Resources

A total in situ coal resource potential of approximately 274 million tonnes is calculated to occur within the Crassier Group in the Table area. This resource figure is subdivided according to formations as listed below:

Crassier Group

Gething Formation	17.5	million tonnes
Dresser Formation	104.3	million tonnes
Brenot Formation	152.3	million tonnes
TOTAL RESOURCE POTENTIAL	274.1	MILLION TONNES

The Table resources are based on trench data which have delineated 9 distinct seams during the past three field seasons. These seams are intrepreted to extend across the entire prospect. All data points were projected onto the nearest cross section lines. The maximum width of influence for any section line was 1000 metres.

The prospect is largely underlain by the Brenot and Dresser Formations, both of which are predominantly covered in this area. Neither have been fully assessed although the Brenot has good potential for additional coal seam development (Section 5.5.4).

The seam containing the greatest proportion of the Gething resources in the Table area, has a coal/coal + rock value of 3.63/4.09 metres (GDR-GS-TRC-83007) and contributes 12.5 million tonnes to the resource total.

Table 6.1.1 presents the in-situ resources according to thickness and formation. All calculations for the Table Prospect are presented with this text in Appendix 2.

7.0 COAL QUALITY

7.1 Summary

Regionally, the Goodrich Moberly Prospect is underlain by potentially surface mineable Gething coal seams of low to high bituminous ASTM rank.

In the southern Moberly area, of the seams that qualified for sampling, 7 seams were deemed to be potentially mineable. These seams were found to be of medium and low volatile bituminous rank. Selective mining and blending these seams could produce either low volatile or medium volatile products.

A good quality thermal coal product is attainable either by mining individual seams and/or by mining and blending at least 7 seams. In addition, the Moberly area is capable of producing either a run of mine, or a high yield of washed coal product of between 6% and 14% ash with a calorific value of between 7300 and 7900 cal/gm.

Good washability characteristics, coupled with relatively "clean" seams, permit simple jig washing equipment to efficiently produce low ash high calorific value coals at yields greater than 83%.

Potentially the best mining section in the southern Moberly area, is seam 5 which has 5.18/5.25 m of coal/coal plus rock. It is a low volatile, low ash, high heating content seam with the following coal quality analysis:

Air Dried Basis

ASH	RM	VM	FC	TS	Gross Calorific Value
6.34%	1.28%	19.46%	72.92%	0.37%	7849 cal/gm

Through judicious multi-seam mining and coal blending techniques a run of mine (ROM) product of about 14% ash could be obtained with the following weighted specifications.

Air Dried Basis

Ash	RM	VM	FC	TS	Gross Calorific Value
14.3%	1.0%	18.4%	66.3%	0.52%	7385 cal/gm

On a dry, mineral matter free basis, the southern Moberly area ROM multi-seam blend is a low volatile bituminous coal with 20.47% volatiles and 79.53% fixed carbon. The calorific value on a moist, mineral matter free basis is 8746 cal/gm or 36.6 MJ/kg.

Alternatively, a run of the mine coal of medium volatile rank with an ash level between 6 and 10% could be produced by selectively mining and blending less than seven seams.

In a 7 seam blend, an increase in volatiles, to the medium volatile bituminous rank classification, is achieved through a partial washing of the +6 mm sized material in order to produce a coal product of between 6 - 11% ash. The volatiles are slightly higher than 22%.

The partially washed blend of 7 seams can yield a product which has the following coal quality:

Air Dried Basis

ASH	RM	VM	FC	TS	Gross Calorific Value
11.28%	0.83%	20.21%	67.68%	0.51%	7438 cal/gm

A total washed product, obtained from the same 7 seams has the following coal quality:

Air Dried Basis

Ash	RM	VM	FC	TS	Gross Calorific Value
6.15%	0.75%	21.50%	71.60%	0.55%	9730 cal/gm

7.2 Procedures & Parameters

7.2.1 Objectives

The objectives of the 1983 coal quality analytical program were as follows:

1. To characterize the Goodrich-Moberly Gething coal.

2. To determine the washability characteristics of the potentially mineable coal seams.

3. To establish the coal quality of various ash level products.

7.2.2 Methodology

Eleven coal seams from three HQ diamond holes were sampled by a geologist after the rock and coal lithologies were visually logged, photographed, and correlated to the geophysical logs. The seams were also correlated to true thickness.

Only seams 0.5 m or greater in thickness on which our recovery was 30% or greater were sampled. Thirty three individual samples were obtained on this basis. The sampling intervals were chosen to represent not only the distribution of rock and coal within the seam but also reflect the apparent variations of ash content within the coal.

The depth intervals sampled and the sample identification

numbers are listed in Appendix 1-1. Further references to the intervals sampled can be found in the geological core descriptions in Appendix B, and on the coal seam data sheets that are included in Appendix 1 - 2.

Seven oxidized samples were taken from 6 surface trench cuts located to the west and north of the 1983 diamond drill holes. Their locations with respect to the diamond core holes are shown in Figure 7.2.2.1. Coal section profiles of the following sampled trenches are included in Appendix 1-3: GDRMBTRC83002,-022,-034,-035,-037, and -038.

All samples were packaged in double lined plastic bags, tagged, and sent to Loring Laboratories in Calgary, Alberta for coal quality analyses.

Representative samples of product coal, as well as samples obtained from the 1983 surface trenches, were sent to petrographer David E. Pearson in Victoria, B.C. for maceral and reflectance study. This data will be submitted at a later date.

Thermogravimetric Analyses of the same product samples were undertaken by Gulf's Sheridan Park Research Centre and, by Dunlop Research Centre in Mississauga, Ontario. The TGA data, due to time constraints, will be submitted under separate cover at a later date.

The 1983 Goodrich Moberly Coal Quality Flowsheet in Figure 7.2.2.2 illustrates the following five stages of

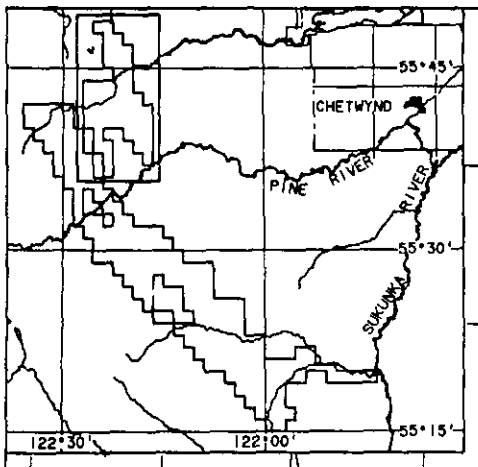
LEGEND

- DIAMOND DRILL HOLE LOCATION
- TRENCH LOCATION
- LICENCE BOUNDARY
- GETHING

SCALE

KILOMETRES 0 1 2 3 4 5

Gulf



GDR-MB-TRC-83002

MOBERLY

BC HYDRO POWER TRANSMISSION

GDR-MB-TRC-83022
GDR-MB-TRC-82016

GDR-MB-TRC-82018
GDR-MB-DDH-81012
GDR-MB-TRC-83037,38
GDR-MB-TRC-83035
GDR-MB-TRC-83034

GDR-MB-DDH-83001
GDR-MB-DDH-83003
GDR-MB-DDH-83002

RIVER

PINE

55°45'
55°40'
122°30'
122°15'

FIGURE 7.2.2.1

GOODRICH COAL PROPERTY

MOBERLY PROSPECT

COAL QUALITY DATA SOURCES

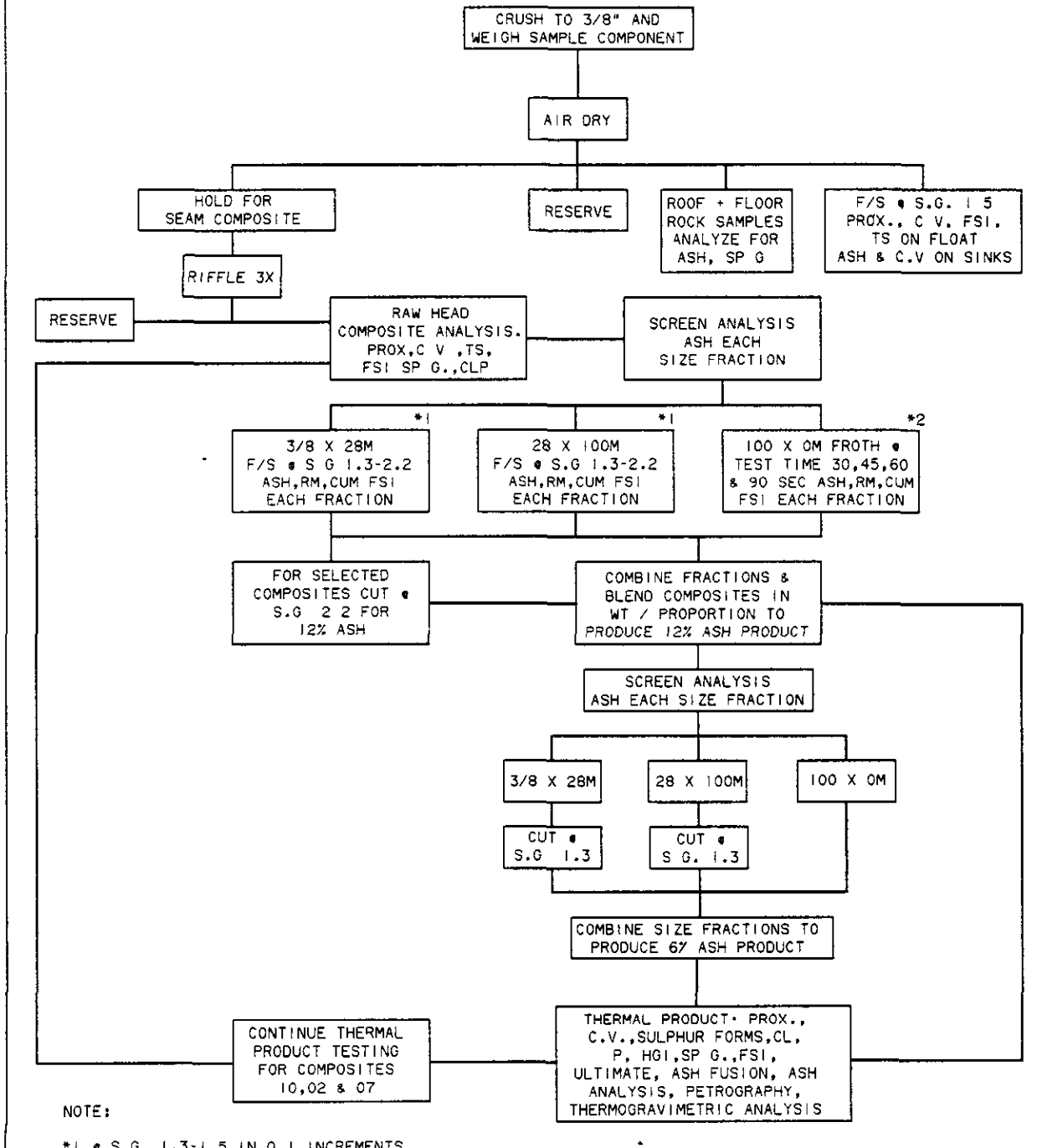
FILE NAME 060:1205_5718700000007.LOCAL 28/11/93

FIGURE 7 2 2 2

GOODRICH COAL PROPERTY

1983 MOBERLY PROSPECT

COAL QUALITY FLOWSHEET



NOTE:

*1 @ S G. 1.3-1.5 IN 0.1 INCREMENTS
@ S.G. 1 5-1.8 IN 0 05 INCREMENTS
@ S G. 1.8-2 2 IN 0 1 INCREMENTS

*2 REAGENT· KEROSENE: MIBC@4 1

analytical work undertaken on the drill core samples. Note that the trench samples were subjected to proximate analysis only.

1. Float Sink Analyses of Individual Sample Intervals.

2. Raw Head Composite Analyses.

3. Washability Study of Composites.

4. Multi-seam blending to produce 6% and 11% ash coals.

5. Coal quality analyses of product coals.

7.2.3 Analytical Procedures

7.2.3.1 Float Sink Data

Following crushing and air drying of each sample, a representative cut was taken for float sink analyses. All samples, except roof and floor rock samples, were initially analyzed at a specific gravity cut point of 1.50, to provide information on the coal's ash, yield and caking potential. The analytical results of the 1.50 specific gravity float and sink material are reported in Appendix 1-4.

7.2.3.2 Raw Head Compositing

Ten Raw Head Composite samples from eight potentially mineable coal seams were analyzed for

proximate, calorific value, total sulphur, FSI, specific gravity, chlorine and phosphorous. The composite coal quality is presented for each drill hole in Appendix 1 - 5.

Composite samples were created by combining, in weight proportion, the simple samples representative of the potential mining sections. The grouping of these raw samples is based on the 1.50 float coal analyses. Generally, compositing was done to establish the optimum coal quality in a given mineable coal section interval.

Raw head analyses for ash, residual moisture and specific gravity were conducted on the roof and floor rock samples. This data is included with the raw head composite analyses in Appendix 1-5.

Seven trench samples were collected from six - 1983 surface cuts and sent to Loring Laboratories for proximate, calorific value, and total sulphur analyses. The raw head sample analyses are included in Appendix 1-6. Raw head analyses of two - 1982 trenches, also done by Loring, are included to augment the discussion on regional coal quality.

7.2.3.3 Size Analyses

Prior to conducting the full range of float sink analyses, screen and ash analyses were done for the 9.5 x .6 mm (+28 mesh), .6 x .15 mm (+100 mesh)

and .15 x 0 mm (-100 mesh) size fractions. The data can be found in Appendix 1 - 7.

7.2.3.4 Washability Study

Fourteen float sink trials were conducted on the +100 mesh sized materials at specific gravities from 1.30 to 1.50 in 0.10 increments, between 1.50 and 1.80 in 0.05 increments, and between 1.80 and 2.20, in 0.10 increments. Ash analyses, residual moisture and cumulative FSI tests were done on each gravity fraction. The -100 mesh material was froth floated at an MIBC: Diesel ratio of 4:1 for periods of 30, 45, 60 and 90 seconds and each recovery, where sufficient sample was available, was analyzed for ash, residual moisture, and cumulative FSI.

The washability data, found in Appendix 1-8, is reported under two washability identifications, WA1 and WA2. Both identification numbers refer to one set of float sink analyses done on one sample. However, the data were separated into two sets because the present computer program will accept only 12 S.G. cut points per sample.

7.2.3.5 Multi-Seam Blends

Based on the washability results of the 10 composites, Gulf's coal processing simulator computer program was utilized to determine the range of product ash and yields attainable from a multi seam blend.

Composite blends of about 11% and 6% ash were chosen.

To simulate an 11% ash blend from 7 seams, only one high ash seam required washing to a lower ash level because the ROM coal blend from these seams is near the 14% ash level. On this seam only the 9.5 x 6 mm size fraction was washed at the highest possible laboratory specific gravity cut point of 2.20. The .6 x 0 mm unwashed material was recombined with the clean coal from the 9.5 x .6 mm material and then the seam sample was blended with the 6 raw coal composites of the remaining 6 seams, on a seam thickness weighted basis.

The approximately 6% ash blend was obtained by taking a 9.5 x .15 mm cut from a representative sample of the 12% ash product and further float sinking it at S.G. 1.30. The S.G. 1.30 float material was then recombined with the .15 x 0 mm 11% washed material to produce the lower ash coal.

In addition, single seam composites 02, 07, and 10 were set aside for a similar suite of thermal product tests as those done on the multi-seam 6% and 11% ash blends.

While the ash levels are approximately the same, the two groups of product coal differ in that the single seam coals represent potential run of mine (ROM) specifications, while the multi-seam blends are indicative of clean coal specifications.

All product samples were subjected to proximate, calorific, sulphur forms, ash mineral, ash fusion, ultimate, Hardgrove Index, specific gravity, FSI, chlorine and phosphorous analysis.

7.3 Coal Quality Discussion

7.3.1 Float Sink Analyses

On the average, at the specific gravity of 1.50, non-coking or thermal coals were recovered from the 3 holes drilled in the southern Moberly area. Only minor seam splits were found to contain coking potential with a free swelling index (FSI) of 4 to 8. However, seam 4 proves to be the exception, indicating good potential for a medium volatile bituminous coking coal with a measured FSI of 6.5 and an ash content of about 5% at the 1.50 specific gravity cut point. The simple sample analyses of the 1.50 float and sink fraction is presented in Appendix 1 - 4.

7.3.2 Size Analyses

The 1983 drill core size analyses are based on a relatively soft coal with a Hardgrove Grindability Index ranging from 83 to 88.

The 3/8 crushed drill core has the following weight averaged size distribution.

9.5 x .6 mm	65%
.6 x .15 mm	25%
.15 x 0 mm	10%

Extrapolation of this size distribution according to Tyler's screen mesh graph suggests that the +6 mm would

contain 18% material in the +3 mm size range while the remaining 47% would be concentrated in the 3.0 x 0.6 mm size range.

Ash analysis on the 0.15 x 0 mm, or fine size fraction, also suggests that with a product ash of between 10 - 14%, the fines may not require washing. Elimination of the fine coal circuit thus would save on an often costly and troublesome plant addition.

7.3.3 Raw Head Composities

The raw head coal quality of the composites from each of 7 Gething seams indicates ash content ranging from about 6 to 44% on an air dried basis. The analysis of each composite is presented in Appendix 1 - 5.

Generally, two groups of head ash can be discerned within the Gething Formation. A low ash content from 6 to 10% is found in seams 4, 5 and 9 located within the middle Gething (see section 1000N, Appendix A). A relatively higher ash of between 17 and 44% is found in seams 3, 10, 18, 19, and 21 located above and below the "cleaner" coal sections.

Of the middle Gething seams, seam 5 with 5.18/5.25 metres of coal to coal plus rock represents the cleanest seam with a low, raw head ash of 6.34% and a gross calorific value of 7849 cal/gm or 32.84 MJ/kg on an air dried basis. On a d.m.m.f. basis the volatiles and fixed carbon are 20.51% and

70.49% respectively. The calorific value on a moist, mineral matter free basis is 8433 cal/gm or 35.29 MJ/kg.

In the lower Gething, seam 21 with 1.04/1.63 metres of coal to coal plus rock represents the highest ash seam composited (composite 04). Partly due to coal loss within the lower composited interval, the raw head ash is 44.39% and the gross calorific value is 4462 cal/g or 18.67 MJ/kg on an air dried basis. On a d.m.m.f. basis the volatiles and fixed carbon are 18.47% and 81.53%, respectively. The calorific value on a moist, mineral matter free basis is 8611 cal/gm or 36.03 MJ/kg. The total sulphur level is 1.07%.

A lower raw head ash product, however, could be recovered from seam 21 if the mining section was reduced to 0.69/0.85 metres of coal to coal plus rock. Simple sample 2177, representing the remaining mineable portion of seam 21 has an air dried ash content of 6.05% and a calorific value of 8097 cal/gm or 33.88 MJ/kg.

Review of the washability and coal composite data indicates that a thermal coal blend from at least 7 potentially mineable seams could produce a run of mine product averaging 14% ash.A multi-seam coal blend of, for example, seams 3, 4, 5, 9, 10, 18 and 19 has the following weight averaged raw coal quality:

Table 7.3.3.1

ROM-14% ASH MULTI-SEAM PRODUCTS
(Air dried basis)

Ash	Residual Moisture	Volatile Matter	Fixed Carbon	Fuel Ratio	Total Sulphur	Calorific Value
14.3	1.0	18.4	66.3	3.6	0.52	7385 cal/g (30.9 MJ/kg)

The weighted averages include the following range of analyses:

Volatile Matter	14.88 to 22.99%
Calorific Value	5898 - 7849 cal/gm
	(24.68 to 32.84 MJ/kg)
Total Sulphur	0.37 to 0.84%
Phosphorous in Coal	0.14 to .271% average .05%
Chlorine in Coal	46 to 64 ppm, average 54 ppm

Based on the Parr formula, the southern Moberly area Gething Formation contains, on average, low volatile bituminous coals.On a dry, mineral matter free basis, the multi-seam coal blend has a volatile matter of 20.47% and a fixed carbon content of 79.53%. The calorific value on a moist, mineral matter free basis is 8746 cal/gm or 36.59 MJ/kg.

An ROM product with less than 14% ash could also be produced by mining and blending only the lower ash coal seams. For example, by mining and blending the top 5 seams, instead of the 7 seams (seams 3, 4, 5, 9, 10, 18 and 19) an ROM coal with a raw head ash of about 10% could be obtained.

The volatile matter content in a blended product could also be controlled through the mining of selected seams. Seams 3, 4, 9 and 10, by ASTM definition, fall into the rank category of medium volatile bituminous coals with volatiles ranging from 22.6% to 27.7% on a d.m.m.f. basis.

7.3.4 Products

Aside from the potential to produce a run of mine multi-seam blend of 10% to 14% ash, at least 3 alternative products could be obtained at high yields.

7.3.4.1 Single Seam Product

Potentially, seam 5 represents the best single seam mining section within the southern Crassier structure. As mentioned earlier, a run of mine product with a low ash and high calorific value could be mined with the following coal quality specifications (Table 7.3.4.1.1).

Preliminary examination of the ash mineral composition and ash fusion temperatures indicate that seam 5 as a 6% ash thermal product would incur a low to medium fouling potential (index 0.24) and a low slagging potential (index 0.06). The base acid ratio of 0.17 is well within the maximum 0.5 allowable by the Japan Coal Development Company. Notably, the sodium content (1.44%) and chlorine content (.0048%) are also within the maximum allowable J.C.D. standards.

Table 7.3.4.1.1

RUN OF MINE SPECIFICATIONS - SINGLE SEAM PRODUCT
(seam 5 - 6% ash)

	AIR DRY	DRY BASIS	DRY and ASH FREE
Proximate Analysis			
Residual Moisture %	1.3	--	--
Ash	6.3	6.4	--
Fixed Carbon %	72.9	73.9	78.9
Volatile Matter %	19.56	19.7	21.1
Total Sulphur	0.37	0.37	0.40
Gross Calorific Value cal/gm	7849	7950	8496
FSI	1.0		
HGI	88		
Specific Gravity	1.32		
Chlorine %	.0048		
Phosphorus in Coal %	.035		
Ultimate Analysis			
Carbon %	82.7	83.8	89.5
Hydrogen %	4.2	4.2	4.5
Nitrogen %	1.0	1.0	1.1
Oxygen %	5.2	5.3	5.6

Ash Fusion °C:	Oxidizing Atmosphere	Reducing Atmosphere
Initial Temp.	+ 1454	+ 1454
Softening Temp.	+ 1454	+ 1454
Hemispherical Temp.	+ 1454	+ 1454
Fluid Temp.	+ 1454	+ 1454

Ash Analysis			
SiO2	53.16%	CaO	2.96%
Al203	26.26%	MgO	1.40%
Fe203	7.31%	SO_3	2.93%
TiO2	0.60%	Na20	1.44%
P205	1.24%	K20	0.50%

7.3.4.2 Multi-Seam Product

The flexibility of low ash, high yield, coal production from either a number of single seams and/or a blend of several seams is largely attributable to the fact that most of the seams contain few rock partings.

Based on several computer generated simulations of the efficiency of a jig washer, used only in the +6 mm size circuit, a washed product of between 6 to 11% ash could be produced with less than 3% near gravity material. Excellent washability characteristics thus contribute to the high yields of between 83 to 95% for the 6 to 11% ash products.

The range of multi-seam blended coal products achievable is exemplified in the 6% and 11% ash quality specifications given in Tables 7.3.4.2.1 and 7.3.4.2.2.

On a dry,mineral matter free basis, both the 6% and 11% ash blend are of medium volatile bituminous ASTM rank with a volatile matter content of 22.52% and 22.03%, respectively. On a moist, mineral matter free basis their calorific values are 8505 cal/gm and 8480 cal/gm., respectively. Vitrinite reflectance values are 1.38 and 1.39, respectively.

As thermal coal products, the ash composition of both the 6% and 11% coal blends indicate that low

Table 7.3.4.2.1

CLEAN COAL SPECIFICATIONS - MULTI-SEAM PRODUCT
(approximately 6% Ash)

	AIR DRY	DRY BASIS	DRY and ASH FREE
Proximate Analysis			
Residual Moisture %	0.8	--	--
Ash%	6.1	6.2	--
Fixed Carbon %	21.5	21.7	23.1
Volatile Matter %	71.6	72.1	76.9
Total Sulphur	0.55	0.55	0.59
Gross Calorific Value cal/gm	7930	7990	8518
FSI	3.0		
HGI	79		
Specific Gravity	1.33		
Prosphorus	.031		
Ultimate Analysis			
Carbon %	82.0	82.7	88.1
Hydrogen %	4.4	4.5	4.8
Nitrogen %	1.1	1.2	1.2
Oxygen %	5.5	5.5	5.9

Ash Fusion °C:	Oxidizing Atmosphere	Reducing Atmosphere
Initial Temp.	1295	1232
Softening Temp.	1317	1246
Hemispherical Temp.	1342	1268
Fluid Temp.	1403	1337

Ash Analysis			
SiO2	62.36%	CaO	3.67%
Al203	17.39%	MgO	1.87%
Fe203	6.86%	SO_3	3.20%
TiO2	0.49%	Na2O	0.96%
P205	1.16%	K2O	1.14%

Table 7.3.4.2.2

CLEAN COAL SPECIFICATIONS - MULTI-SEAM PRODUCT
(approximately 11% Ash)

	AIR DRY	DRY BASIS	DRY and ASH FREE
Proximate Analysis			
Residual Moisture %	0.8	--	--
Ash%	11.3	11.3	--
Fixed Carbon %	67.7	68.2	77.0
Volatile Matter %	20.2	20.4	23.0
Total Sulphur	0.5	0.5	0.6
Gross Calorific Value cal/gm	7438		
FSI	1.5		
HGI	78		
Specific Gravity	1.36		
Phosphorus in Coal %	.046		
Ultimate Analysis			
Carbon %	75.1	75.7	85.4
Hydrogen %	3.9	3.9	4.3
Nitrogen %	1.1	1.1	1.2
Oxygen %	8.0	8.1	9.1

Ash Fusion °C:	Oxidizing Atmosphere	Reducing Atmosphere
Initial Temp.	1301	1246
Softening Temp.	1314	1259
Hemispherical Temp.	1331	1278
Fluid Temp.	1406	1339

Ash Analysis			
SiO2	61.61%	CaO	3.71%
A1203	16.45%	MgO	2.08%
Fe203	6.57%	SO_3	3.54%
TiO2	0.79	Na20	0.79%
P205	0.96%	K20	1.13%

fouling (index 0.17 and 0.14, respectively) and low slagging (index 0.10 and 0.09, respectively) problems would be incurred in burning these high calorific coals. Both coals have a base acid ratio of 0.18. Nitrogen levels are 1.1% and sodium in ash are 0.96 and 0.79% respectively - all well within JCD Standards of Coal Quality.

Further analyses are continuing with the 6% ash blend to test its coking potential. Initial petrographic data suggest that a good coking coal may be recoverable from the blend with measured inerts of 34% and a predicted FSI of 7.

7.3.5 Trench Samples

To provide a preliminary indication of the regional coal quality potential of the Moberly area, seams 10, 13, 19 and 26 were sampled in 1983 and proximate analysis performed on them. This data is presented in Appendix 1 - 6.

Although the analyses are based on oxidized samples, the results on a dry, mineral matter free basis confirm the existance of medium, and possibly high, volatile coals to the north and west of the 1983 drill sites. On a d.m.m.f. basis the volatiles range from 23.87 to 33.84%. The reflectance data, however, supports only the existance of low and medium volatile ranked bituminous coals.

On a moist, mineral matter free basis the calorific values have been calculated in a range from 6112 cal/gm (25.57 MJ/kg) to 7863 cal/gm (25.67 MJ/kg). The raw head ash level for the trench samples vary from 5.23% to 30.08% on an air dried basis.

7.3.6 Coal Rank

As indicated in Table 7.3.6.1 the drill holes contain both low and medium volatile coal seams. However, when the seams (seams 3, 4, 5, 9, 10, 18 and 19) are blended on a seam thickness basis the resultant ROM product coal is of low volatile rank.

It is also possible, by selectively mining and including in the blend predominantly the medium volatile coal

seams, to produce a medium volatile ROM coal.

In addition, by washing the 7 seam blend, it is possible to produce a medium volatile clean coal product.

It is interesting to note that samples from some of the trenches indicate the possible presence of high volatile coal seams.

Based on proximate analyses, high volatile bituminous ranked coal in three trench samples were calculated by the Parr formula. The samples however, were oxidized and, therefore may invalidate these conclusions. In fact, a reflectance of 1.44 for one of the calculated trench samples suggests it is a medium volatile coal. Possibly, the recovery of unoxidized samples from these potentially high volatile coal areas could establish their true rank.

Rank determinations by the Parr formula, and in some cases, by reflectance are shown in Table 7.3.6.1 to illustrate the distribution of rank by seam and location. The data source locations are shown in Figure 7.2.2.1.

Table 7.3.6.1
COAL RANK

Seam	Data Source	Parr Formula Volatiles (d.m.m.f.)	Rank	Petrography Reflectance	Rank
3	DDH83001	27.7	mv	--	--
4	DDH83001*	23.3	mv	1.31	mv
5	DDH82012	19.7	lv	--	--
5	DDH83001	20.5	lv	--	--
9	DDH83003*	22.6	mv	1.37	mv
10	DDH83003	22.6	mv	--	--
10	TRC83002*	23.9	mv	1.15	mv
13	TRC83035*	25.2	mv	1.56	lv
18	DDH83002	18.5	lv	--	--
19	DDH83002	16.6	lv	--	--
19	TRC83002	33.8	hv	1.44	mv
19	TRC83037	23.9	mv	--	--
19	TRC83037	28.1	mv	1.33	mv
19	TRC83037	24.7	mv	--	--
19	TRC82016	35.6	hv	--	--
19	TRC82016	34.6	hv	--	--
26	TRC83034	--	hv	1.58	lv
(3, 4, 5, 9, 10, 18, 19)	Blended 6% Ash	22.5	mv	1.39	mv
(3, 4, 5, 9, 10, 18, 19)	Blended 11% Ash	22.0	mv	1.38	mv

hv = high volatile, mv = medium volatile, lv = low volatile

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Appendix 1

COAL QUALITY DATA

Appendix 1

Table of Contents

Sample Summary	1-1
Coal Seam Data Sheets	1-2
Trench Seam Profiles	1-3
Float Sink Data CONFIDENTIAL	1-4
Raw Head Composites	1-5
Raw Head Trench Samples	1-6
Size Analysis of Composites CONFIDENTIAL	1-7
Washability Data CONFIDENTIAL	1-8

Appendix 1 - 1

Sample Summary

A. Summary of Simple & Composite Sample Intervals

B. Details of Simple Sample Intervals

C. Details of Composite Sample Intervals

12/13/83 13 48 15 BEGIN SYSTEM 2000 - RELEASE 10 1

USER,X ECHO OFF

***** GEX - 03 01 - COCC COAL/01 ALLOCATED

-556- OPENED COAL 56 29282 13/12/83 10 08 43

1 GOODRICH COAL PROJECT SAMPLE SUMMARY DIAMOND DRILL HOLES 1983

13/12/83

* DATA SOURCE	DEPTH FROM	DEPTH TO	SEAM ID	SAMPLE ID	SAMPLE TYPE	SAMPLE ID FROM	SAMPLE ID TO
***							
* DDH83001	15 81	16 66	2	2181	SIMP		
*	23 15	23 78	3	9	COMP	2152	2152
*	23 15	23 78	3	2152	SIMP		
*	29 79	30 67	4	2153	SIMP		
*	29 79	30 27	4	10	COMP	2153	2153
*	70 00	70 04		2154	SIMP		
*	70 04	70 28	5	2155	SIMP		
*	70 04	76 20	5	1	COMP	2155	2159
*	70 28	70 78	5	2156	SIMP		
*	70 78	76 20	5	2	COMP	2157	2159
*	70 78	72 02	5	2157	SIMP		
*	72 02	72 07	5	2158	SIMP		
*	72 07	76 20	5	2159	SIMP		
*	76 20	77 62		2160	SIMP		
* DDH83002	10 52	10 62		2161	SIMP		
*	10 62	10 82	18	2162	SIMP		
*	10 62	13 67	18	3	COMP	2162	2164
*	10 82	11 54	18	2163	SIMP		
*	11 54	13 67	18	2164	SIMP		
*	13 67	13 86		2165	SIMP		
*	22 41	22 51		2166	SIMP		
*	22 51	22 76		2167	SIMP		
*	22 76	26 77	19	4	COMP	2168	2172
*	22 76	24 63	19	2168	SIMP		
*	24 63	24 93	19	2169	SIMP		
*	24 93	25 91	19	2170	SIMP		
*	25 91	26 17	19	2171	SIMP		
*	26 17	26 77	19	2172	SIMP		
*	26 77	28 14	19	5	COMP	2173	2174
*	26 77	27 80	19	2173	SIMP		
*	27 80	28 14	19	2174	SIMP		
*	28 14	28 24		2175	SIMP		
*	30 76	31 45	20	2185	SIMP		
*	47 14	47 26		2176	SIMP		
*	47 26	48 21	21	2177	SIMP		
*	47 26	26 77	21	6	COMP	2177	2179
*	48 21	48 69	21	2178	SIMP		
*	48 69	49 08	21	2179	SIMP		
*	49 08	49 20		2180	SIMP		
*	61 28	61 79	23	2186	SIMP		
*	61 79	64 03	24	2187	SIMP		
* DDH83003	38 75	43 60	9	2182	SIMP		
*	43 60	43 60	9	7	COMP	2182	2182
*	103 70	103 84		2183	SIMP		
*	103 84	105 56	10	8	COMP	2184	2184
*	103 84	105 56	8	2184	SIMP		

13 48 19 12/13/83 END SYSTEM 2000 - RELEASE 10 1

FORM 0001

GULF CANADA RESOURCES INC. - COAL DIVISION

14/DEC/83 SIMPLE SAMPLE SUMMARY

APPARENT THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83001										
	2	2181	15 81	16 66	56 47	0 27	0 21	0 37	0 00	0 64- 0 21
	3	2152	23 15	23 78	93 65	0 59	0 00	0 04	0 00	0 63- 0 00
	4	2153	29 79	30 67	65 90	0 58	0 00	0 15	0 15	0 73- 0 15
		2154	70 00	70 04	100 00	0 00	0 04	0 00	0 00	0 00- 0 04
	5	2155	70 04	70 28	79 16	0.19	0.00	0 05	0 00	0 24- 0.00
	5	2156	70 28	70 78	100 00	0 00	0 50	0 00	0 00	0 00- 0 50
	5	2157	70 78	72 02	41 12	0 51	0 00	0 73	0 00	1 24- 0 00
	5	2158	72 02	72 07	100 00	0 00	0 05	0 00	0 00	0 00- 0 05
	5	2159	72 07	76 20	97 09	3 99	0 02	0 12	0 00	4 11- 0 02
		2160	76 20	77 62	88 73	0 00	1 26	0 00	0 16	0 00- 1 42

GULF CANADA RESOURCES INC - COAL DIVISION

13/DEC/83 SIMPLE SAMPLE SUMMARY PAGE 2

APPARENT THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83002										
		2161	10 52	10 62	100 00	0 00	0 10	0 00	0 00	0 00- 0 10
	18	2162	10 62	10 82	100 00	0 20	0 00	0 00	0 00	0 20- 0 00
	18	2163	10 82	11 54	80 55	0 12	0 46	0 07	0 07	0 19- 0 53
	18	2164	11 54	13 67	82 15	1 70	0 05	0 20	0 18	1 90- 0 23
		2165	13 67	13 86	100 00	0 00	0 19	0 00	0 00	0 00- 0 19
		2166	22 41	22 51	100 00	0 00	0 10	0 00	0 00	0 00- 0 10
		2167	22 51	22 76	100 00	0 00	0 25	0 00	0 00	0 00- 0 25
	19	2168	22 76	24 63	82 35	1 54	0 00	0 33	0 00	1 87- 0 00
	19	2169	24 63	24 93	46 66	0 00	0 14	0 00	0 16	0 00- 0 30
	19	2170	24 93	25 91	81 63	0 80	0 00	0 18	0 00	0 98- 0 00
	19	2171	25 91	26 17	65 38	0 00	0 17	0 00	0 09	0 00- 0 26
	19	2172	26 17	26 77	100 00	0 60	0 00	0 00	0 00	0 60- 0 00
	19	2173	26 77	27 80	89 32	0 08	0 84	0 00	0 11	0 08- 0 95
	19	2174	27 80	28 14	100 00	0 34	0 00	0 00	0 00	0 34- 0 00
		2175	28 14	28 24	100 00	0 00	0 10	0 00	0 00	0 00- 0 10
	20	2185	30 76	31 45	100 00	0 30	0 39	0 00	0 00	0 30- 0 39
		2176	47 14	47 26	100 00	0 00	0 12	0 00	0 00	0 00- 0 12
	21	2177	47 26	48 21	87 36	0 77	0 06	0 00	0 12	0 77- 0 18
	21	2178	48 21	48 69	87 50	0 00	0 42	0 00	0 06	0 00- 0 48
	21	2179	48 69	49 08	48 71	0 19	0 00	0 20	0 00	0 39- 0 00
		2180	49 08	49 20	100 00	0 00	0 12	0 00	0 00	0 00- 0 12
	23	2186	61 28	61 79	74 50	0 38	0 00	0 13	0 00	0 51- 0 00
	24	2187	61 79	64 03	90 17	0 14	1 88	0 04	0 18	0 18- 2 06

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83003										
	9	2182	38 75	43 60	52 57	2 55	0 00	2 30	0 00	4 85- 0 00
		2183	103 70	103 84	100 00	0 00	0 14	0 00	0 00	0 00- 0 14
	8	2184	103 84	105 56	31 97	0 55	0 00	1 17	0 00	1 72- 0 00

GULF CANADA RESOURCES INC - COAL DIVISION

14/DEC/83 COMPOSITE SAMPLE SUMMARY PAGE 2

APPARENT THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83001												
	5	1	2155	2159	70 04	76 20		4 69	0 57	0 90	0 00	5 59- 0 57
	5	2	2157	2159	70 78	76 20		4 50	0 07	0 85	0 00	5 35- 0 07
	3	9	2152	2152	23 15	23 78		0 59	0 00	0 04	0 00	0 63- 0 00
	4	10	2153	2153	29 79	30 27		0 58	0 00	0 15	0 15	0 73- 0 15

GULF CANADA RESOURCES INC - COAL DIVISION

14/DEC/83 COMPOSITE SAMPLE SUMMARY PAGE 2

APPARENT THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83002												
	18	3	2162	2164	10 62	13 67		2.02	0 51	0 27	0 25	2 29- 0 76
	19	4	2168	2172	22 76	26 77		2 94	0 31	0 51	0 25	3 45- 0 56
	19	5	2173	2174	26 77	28 14		0 42	0 84	0 00	0 11	0 42- 0 95
	21	6	2177	2179	47 26	26 77		0 96	0 48	0 20	0 18	1 16- 0 66

GULF CANADA RESOURCES INC - COAL DIVISION

14/DEC/83 COMPOSITE SAMPLE SUMMARY PAGE 2

APPARENT THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83003												
	9	7	2182	2182	43 60	43 60		2.55	0 00	2 30	0 00	4 85- 0 00
	10	8	2184	2184	103 84	105 56		1 56	0 00	1 17	0 00	2 73- 0 00

Appendix 1 - 2

Coal Seam Data Sheets

DDH 83001	Seam 2
	Seam 3
	Seam 4
	Seam 5
DDH 83002	Seam 18
	Seam 19
	Seam 20
	Seam 21
	Seam 21 & 24
DDH 83003	Seam 9
	Seam 10

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO GDR-MB-DDH-83001 SEAM 2 SEAM INTERVAL 15.81m - 16.66m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK) 0.61m / 0.82m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC	SAMPLE NO. SINPLE	SAMPLE NO. COMPOS	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S'	MJ/KG	FSI
								SPG. = 1.50 FLOAT						
	15.13													
	15.28		(0.15)											
			0.53											
	15.81			0.05										
	15.86		0.17											
	16.03			0.12										
	16.21		0.04	0.02	56.5	2181		1.68	5.82	22.54	69.96	0.98	32.77	1.0
				(0.37)										
	16.58			0.08										
	16.66		0.13											
	16.89		0.10											

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO GDR-MB-DDH-83001 SEAM 3 SEAM INTERVAL 23.15m - 23.78m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK) 0.60m / 0.60m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S	MJ/KG	FSI
	22.43		0.48											
			0.03											
	23.15		0.21	(0.04)										
	23.19			0.06										
				0.19										
	23.55			0.11	93.7	2152	09	1.26	20.87	22.99	54.88	0.84	25.91	1.5
	23.78			0.19										
				0.04										
			0.24											
	24.02		(0.28)											
	24.30		0.10											
	24.40													

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COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO GDR-MB-DDH-83001 SEAM 4 SEAM INTERVAL 29.79m - 30.67m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK) 0.72m / 0.87m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	X REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S	mJ/kg	FSI
	29.03													
	29.12		0.09											
			0.39											
	29 51		0.19											
	29 70		0.09											
	29 79			0.58	65 9	2153	10	1.23	10 25	21 49	67 03	0 81	31 69	4.0
	30 37		(0.15)											
	30 52			(0.15)										
	30.67		0.04											
			0.09											
	30.95		0.15											

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO GDR-MB-DDH-83001 SEAM 5 SEAM INTERVAL 70.78m - 76.20m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 5.41m / 5.96m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.90

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S'	MJ/KG	FSI
	68.73		0.07											
	68 80		0.20											
	69.00		0 56											
	69.56		0.43											
	69.99		0 05	0.15	100.0	2154								
	70 04			(0 05)	79.2	2155								
	70 28		0.30	0.04	100.0	2156								
	70.58		0.20											
	70.78			0.09										
	70.87			(0.37)										
	71.24			0 21	41.1	2157								
	71.45			(0 36)										
	71.81			0.21	100.0	2158								
	72 02		0 05	0 01										
			0.01											
				1.16			01	1.34	16 24	18 03	64 39	0 34	29.37	1 0
	73.25			(0.12)										
	73.37													
					97 1	2159	02	1.28	6 34	19 46	72 92	0 37	32.84	1 0
				2,60										
	75.95		0 01	0 22										
	76.20		(0.16)											
	76.36		0.10		100 0	2160								

(200,67)83:007001.DAT

GDR 83 01 4 OF 4

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83002 SEAM 18 SEAM INTERVAL 10.62m - 13.67m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK) 1.91m / 2.54m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP. 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S'	MJ/KG	FSI
	10.36		0.06											
			0.10		100	2161								
	10.62		0.10	0.20	100	2162								
	10 82		0.18											
			0.10	0 07	80 6	2163								
	11.10													
	11.24		(0.07)	(0.07)										
	11.41		0.10	0.05										
	11.54		0.08											
				0 64										
	12.18						03	1.12	29.54	14.89	54.45	0 54	24.68	1.0
	12.38			(0.20)										
				0.52	82 2	2164								
				0.43										
	13.35		0.05	0.02										
	13 58		(0.18)											
	13.67			0.09	100	2165								
	13 86		0.19											
	14.01		(0.15)											

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc ---------- RESISTIVITY ——————

DRILL NO. GDR-MB-DDH-83002 SEAM 19 SEAM INTERVAL 22.76 m - 26.77 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 3.08m / 3.58m

DENSITY SCALE 1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m 6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SAMPLE	SAMPLE NO. COMPOS	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S	MJ/KG	FSI
	21.66													
	21.78		0.12											
	22.02		0.24											
			0.39											
	22.41													
	22.51		0.10		100.0	2166								
			0.25		100.0	2167								
	22.76			(0.07)										
	23.05			0.22										
	23.20			(0.15)										
					82.4	2168								
				1.32										
	24.52													
	24.63			(0.11)										
	24.79		(0.16)		46.7	2169	04	0.86	17.66	14.88	66.60	0.60	29.01	0.5
	24.93		0.14											
				0.80	81.6	2170								
	25.73													
	25.91			0.18										
	26.00		(0.09)		65.4	2171								
	26.17		0.17											
				0.60	100.0	2172								
	26.77													
	26.96		(0.11)											
	27.03		0.08	0.07										
			0.33											
				0.01	89.3	2173	05	1.06	65.50	11.97	21.47	0.71	9.89	0.0
			0.24											
	27.61		0.12											
	27.80		0.07											
				0.34	100.0	2174								
	28.14				100.0	2175								
			0.10											
	28.45		0.21											

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO GDR-MB-DDH-83002 SEAM 20 SEAM INTERVAL 30.76 m - 31.45 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 0.26m / 0.60m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP.	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FSI
2 3 4 5 6														
													SPG. = 1.50 FLOAT	
	30.47		0.09											
	30.56		0.20											
	30.76			0.04										
	30.94		0.14											
			0.02	0.02										
			0.05	0.02	100.0	2185		1.49	10.06	18.90	69.55	1.28	31.32	0.5
			0.07											
	31.18			0.11										
	31.29		0.11											
	31.45			0.05										
	31.54		0.09											

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83002 SEAM 21 SEAM INTERVAL 47.26 m - 49.08 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK) 0.91m / 1.63m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S	MJ/KG	FSI
	47.14													
	47.26		0.12	0.03	100.0	2176								
			0.02	0.17										
	47 48													
	47.60		(0 12)											
				0.26	87 4	2177								
			0.04											
	48.21						06	1.11	44 39	13 28	41.22	1.07	18 67	1.0
			(0.06)											
			0 42		87.5	2178								
	48.69			0.12										
	48 81			(0 20)	48.7	2179								
	49.01			0.07										
	49 08		0 12		100.0	2180								
	49.20													

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO GDR-MB-DDH-83002 SEAM 23 + 24(carb.zone)
SCALE 1:60 FORMATION GETHING

SEAM INTERVALS 61.28 m - 61.79 m
62.32 m - 63.06 m
COAL/COAL + ROCK (TRUE THK) 0.45m / 0.45m
0.16m / 0.65m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SP.G. = 1.50 FLOAT

SEAM COMP	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S'	MJ/KG	FSI
1 2 3 4 5 6	60.51		0.48											
	60.99		(0.29)											
	61 28			0.25										
	61.53			(0 13)	74.5	2186		0.88	5.66	17.78	75.88	1.48	33.85	3.5
	61 66			0 13										
	61.79		(0.08)											
			0 53											
	62.32			0.08										
	62.40		(0.03)											
			0.48											
	62 96		(0 05)	(0.04)	90.2	2187		0 87	16.77	19.90	62.46	2.76	29.84	8 5
	63 06			0.06										
			0 41											
			(0.02)											
			0 44											
	63.93		0.10											
	64.03													

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO GDR-MB-DDH-83003 SEAM 9 SEAM INTERVAL 38.75 m - 43.60 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK) 1.98m / 1.98m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP. 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S'	MJ/KG	FSI
	38.11			0.03										
	38.14		0.39											
	40.09		(0 22)											
	38.75													
				(1.34)										
	40.09													
				1.58	52.6	2182	07	0.96	7.46	21.33	70.25	0 49	32.47	3.0
	41.69			0.02										
				(0.96)										
	42.65													
				0.95										
	43.60		0.06											
	43 66		(0.50)											
	44.16													

1220,571(83)007002 DAT

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83003 SEAM 10 SEAM INTERVAL 103.84 m - 105.56 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 1.07m / 1.07m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES MOIST	ASH	VM	FC	S'	MJ/KG	FSI
	103.02		0.28											
	103.40		(0.10)											
	103.48		(0.20)	0.08										
			0.01 Tuff											
	103.84		0.14	0.01	100.0	2183								
				(0.75)										
	104.59			0.41	32.0	2184	08	0.59	19.11	19.48	60.82	0.52	28.99	6.5
	104.90			(0.42)										
	105.42			0.14										
	105.56		0.39											
	105.95													

[205,57]83100700Z DAT

Appendix 1 - 3

Trench Seam Profiles

GDR MB TRC 83002

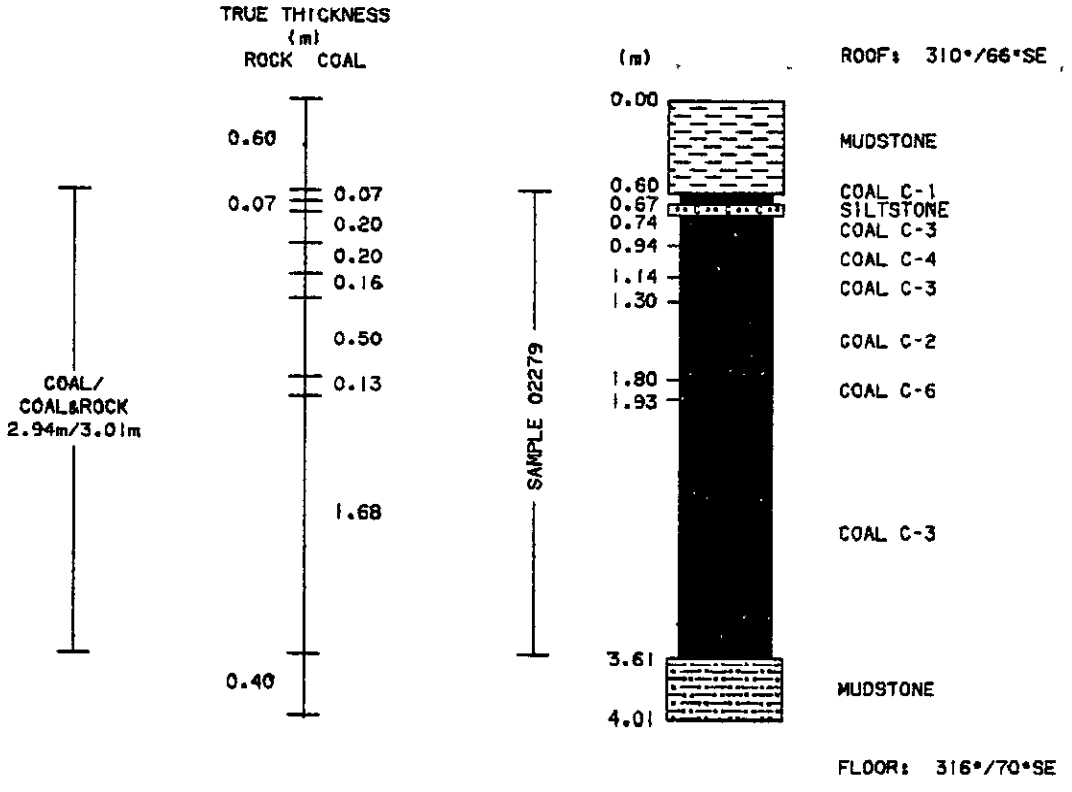
GDR MB TRC 83022

GDR MB TRC 83034

GDR MB TRC 83035

GDR MB TRC 83037

GDR MB TRC 83038



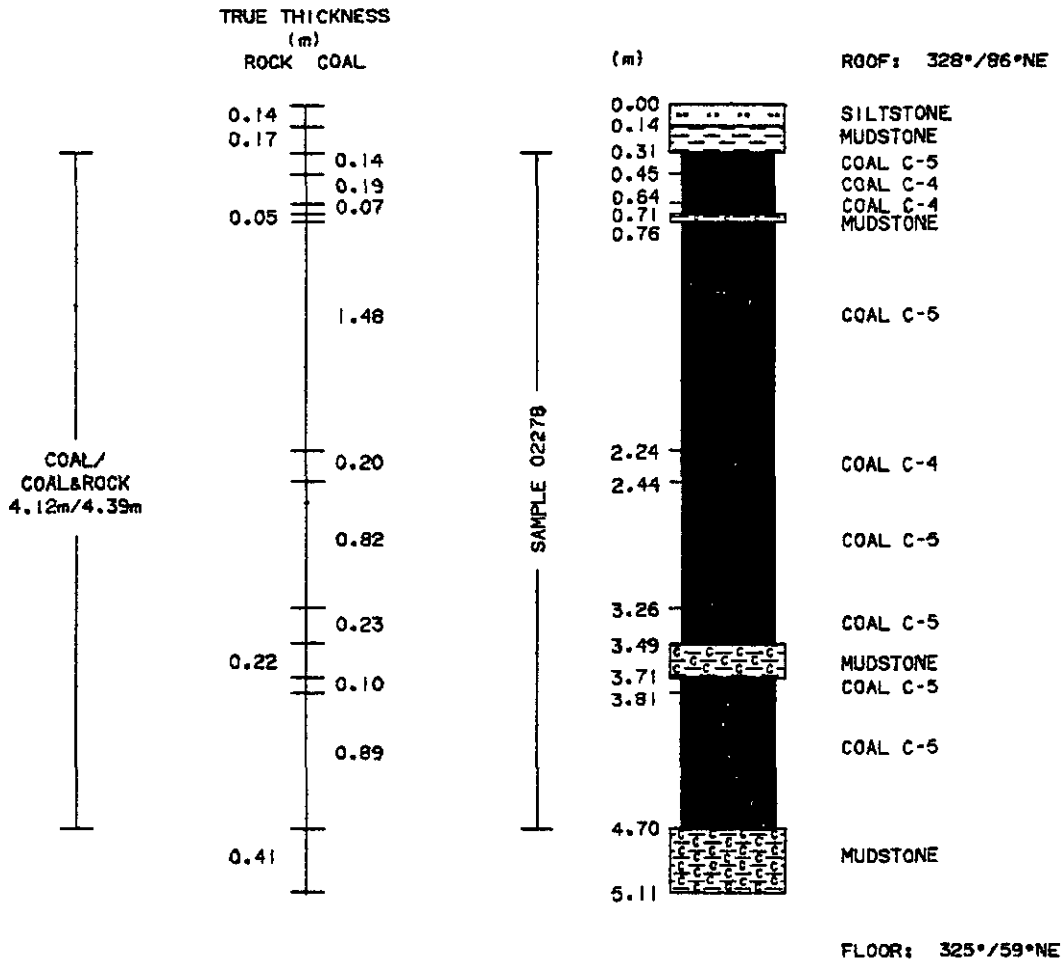
FORMATION	:	GETHING
UTM COORDINATES	:	6184070mN, 537280mE
MAP CARD NUMBER	:	930/16WD-11
AIR PHOTO NUMBER	:	HA 80780-238
TRENCH DEPTH	:	0.9m
TRENCH WIDTH	:	1.5m
TRENCH LENGTH	:	4.01m
TRENCH BEARING	:	234°
TRENCH SLOPE	:	26°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83002

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: R. INKSTER	DATE: 22/08/83
APPROVED BY: V. DUFORD	

GSD:[205,57183098600].LOG



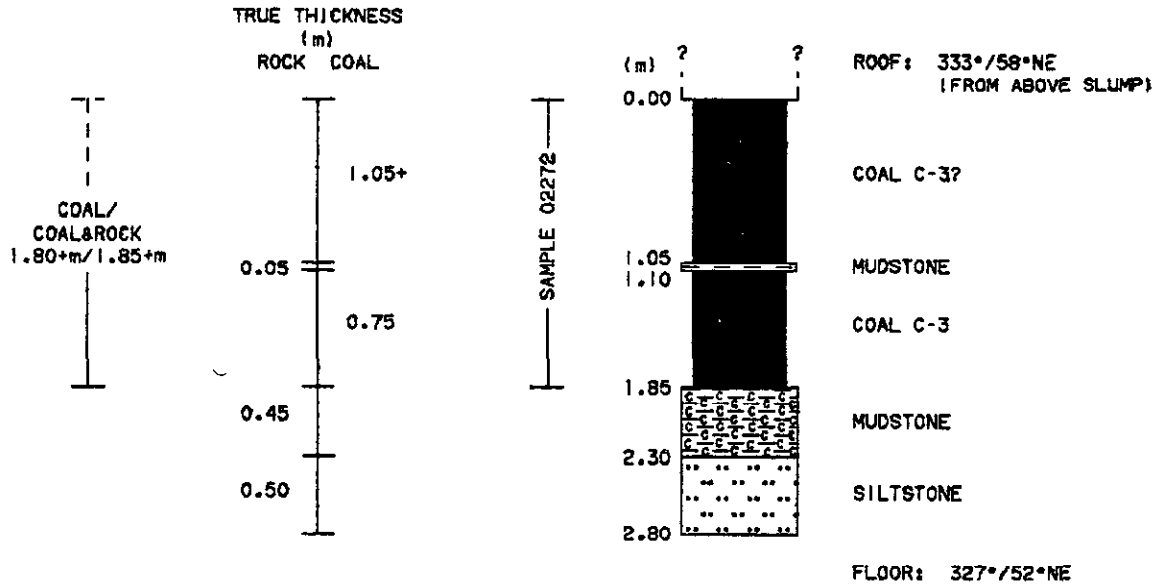
FORMATION	:	GETHING
UTM COORDINATES	:	6175765mN, 540080mE
MAP CARD NUMBER	:	930/9WK-10
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	0.9m
TRENCH WIDTH	:	0.8m
TRENCH LENGTH	:	6.31m
TRENCH BEARING	:	274°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83022

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: R. INKSTER	DATE: 11/08/83
APPROVED BY: J. DUFORD	

GSD:[205,571830986004.LOG



UPPER COAL CONTACT NOT FOUND. ROOF OF SEAM IS SLUMPED. COAL COULD BE AS THICK AS 2.50m.

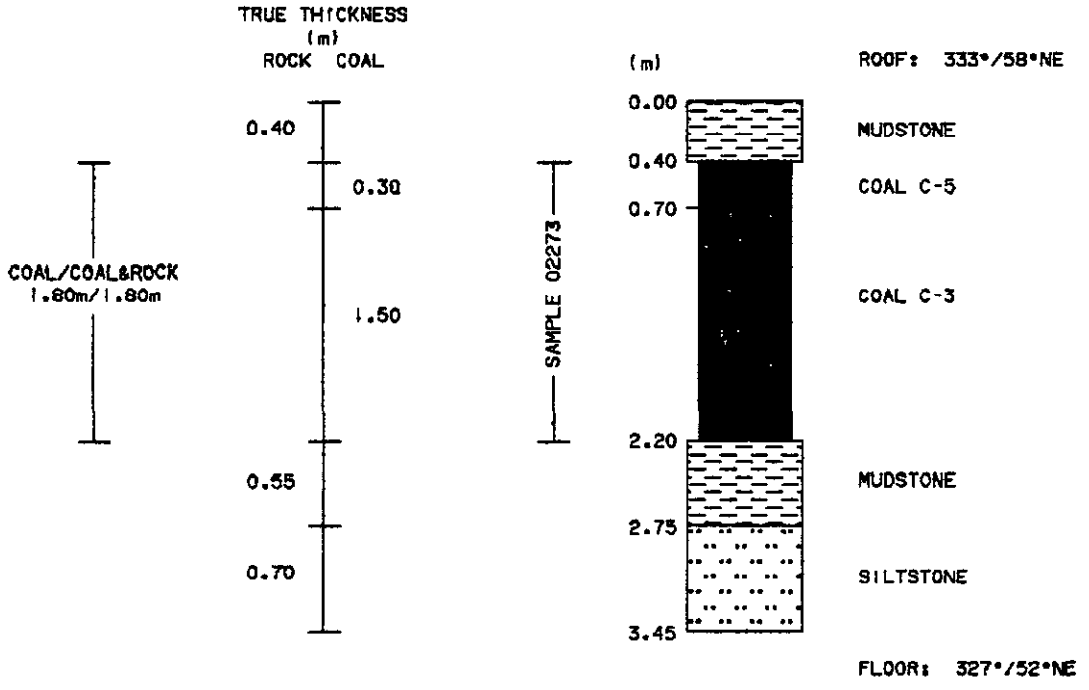
FORMATION	:	GETHING
UTM COORDINATES	:	6169350mN, 537580mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	3.00m
TRENCH BEARING	:	230°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83034

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 12/07/83
APPROVED BY: V. DUFORD	

090:1206,671830986006.LOG



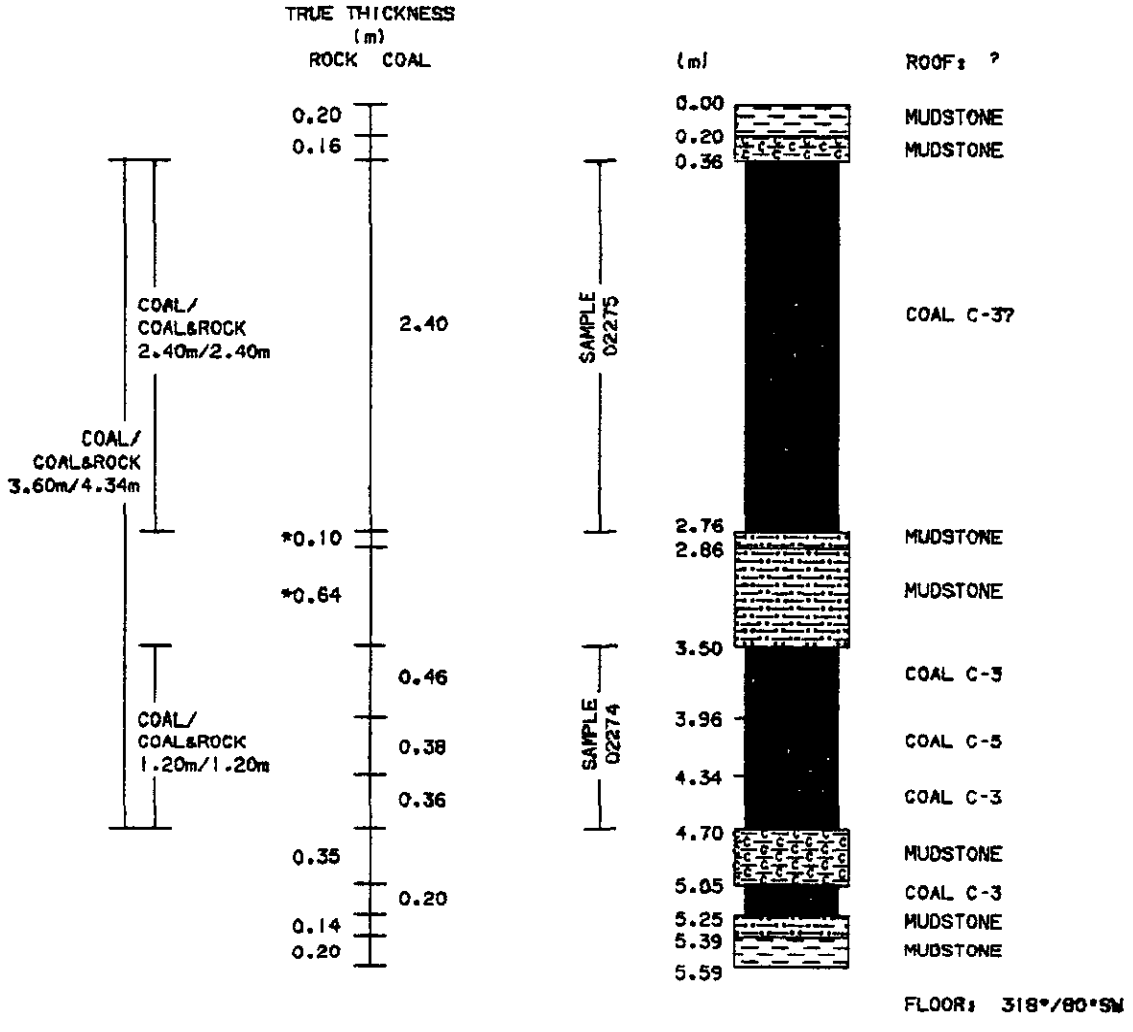
FORMATION	:	GETHING
UTM COORDINATES	:	6169520mN, 537730mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	3.50m
TRENCH BEARING	:	245°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83035

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 12/07/83
APPROVED BY: V. DUFORD	

GSD:[205,571830988006.LOG



*SLUMPED: THICKNESSES ARE ESTIMATES.

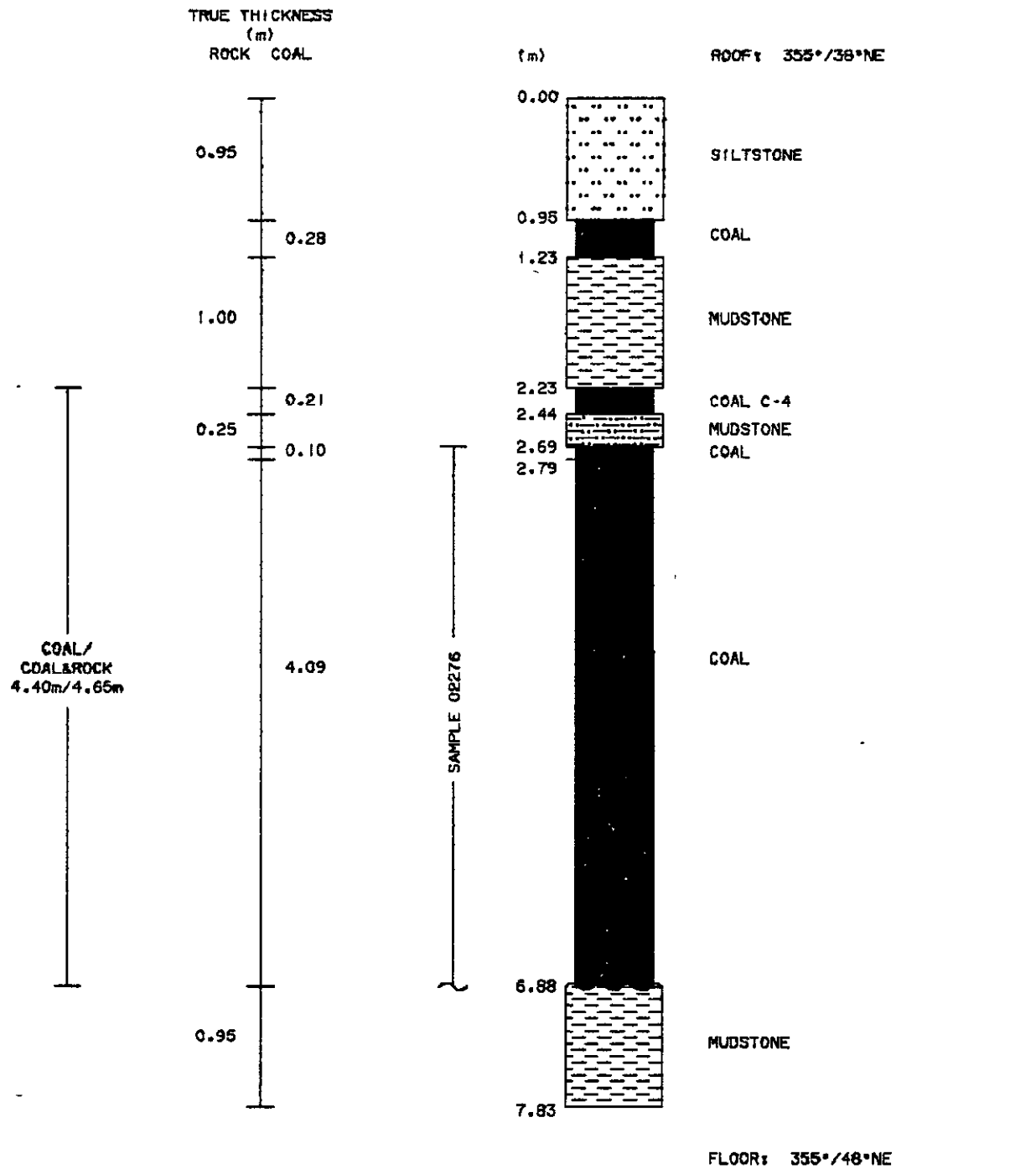
FORMATION	:	GETHING
UTM COORDINATES	:	6169720mN, 537980mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	5.60m
TRENCH BEARING	:	255°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83037

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 18/07/83
APPROVED BY: V. DUFORD	

GDR:[295,571830586007.LOG



FORMATION	:	GETHING
UTM COORDINATES	:	6169740mN, 538100mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	1.2m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	8.00m
TRENCH BEARING	:	305°
TRENCH SLOPE	:	20°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83038

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 13/07/83
APPROVED BY: V. CLIFFORD	

GSD:(205,571)830986007.LOG

Appendix 1 - 5

Raw Head Composites

Coal Quality of DDH 83001, DDH 83002 and DDH 83003:

Proximate

Specific Gravity

FSI

Calorific Value

Phosphorous

Chlorine

HGi

Ash Minerial

Ash Fushion

Ultimate Analysis

12/12/83 08.57:16 BEGIN SYSTEM 2000 - RELEASE 10 1

USER,X.ECHO OFF.

***** GEX - 03.01 - COCC COAL/01 ALLOCATED

-556- OPENED ,, ,COAL 56 28332 11/12/83 17·59·02

1 GOODRICH MOBERLY AREA GETHING COAL SEAMS- RAW HEAD COMPOSITES

12/12/83

* DATA SOURCE	SAMP ID	SAMP TYPE	SEAM ID	HEAD SAMP ID	RES MOIST %	ASH %	VM %	FC %	TS %	SPG	FSI	CAL MJ-KG	PHOS %	CL %	HGI	NOTES
***																
* DDH83001	1	COMP	5	HD1	1 34	16 24	18 03	64 39	34	1 40	1 0	29 37	048	120		
*	2	COMP	5	HD1	1 28	6 34	19 46	72 92	37	1 32	1 0	32 84	035	48	88 0	
*	9	COMP	3	HD1	1 26	20 87	22 99	54 88	84	1 44	1 5	25 91	019	58		
*	10	COMP	4	HD1	1 23	10 25	21 49	67 03	81	1 34	4 0	31 69	271	47	82 0	
*	2160	SIMP		HD1	1 23	89 95				2 44						FLOOR SAMPLE

08 57.19 12/12/83 END SYSTEM 2000 - RELEASE 10 1

FORM 0001

12/12/83 08 56 27 BEGIN SYSTEM 2000 - RELEASE 10 1

USER,X ECHO OFF.
***** GEX - 03 01 - COCC COAL/01 ALLOCATED
-556- OPENED ..COAL 56 28332 11/12/83 17 59 02
1 GOODRICH MOBERLY AREA GETHING COAL SEAMS- RAW HEAD COMPOSITES
12/12/83

* DATA SOURCE	SAMP ID	SAMP TYPE	SEAM ID	HEAD SAMP ID	RES MOIST %	ASH %	VM %	FC %	TS %	SPG	FSI	CAL MJ-KG	PHOS %	CL %	HGI	NOTES
***																
* DDH83002	3	COMP	18	HD1	1 12	29 54	14 89	54 45	54	1 48	1 0	24 68	041	58		
*	4	COMP	19	HD1	86	17 66	14 88	66 60	60	1 42	5	29 01	026	64		
*	5	COMP	19	HD1	1 06	65 50	11 97	21 47	71	2 00	0	9 89	149	60		
*	6	COMP	21	HD1	1 11	44 39	13 28	41 22	1 07	1 70	1 0	18 67	070	58		
*	2161	SIMP		HD1	87	83 95				2 43						ROOF SAMPLE
*	2165	SIMP		HD1	1 08	74 20				2 10						FLOOR SAMPLE
*	2166	SIMP		HD1	85	80 71				2 22						ROOF SAMPLE
*	2175	SIMP		HD1	65	90 44				2 47						FLOOR SAMPLE
*	2176	SIMP		HD1	52	67 31				1 94						ROOF SAMPLE
*	2180	SIMP		HD1	1 18	88 59				2 44						FLOOR SAMPLE

08 56 29 12/12/83 END SYSTEM 2000 - RELEASE 10 1

FORM 0001

12/12/83 08.54.57 BEGIN SYSTEM 2000 - RELEASE 10 1

USER,X ECHO OFF
***** GEX - 03 01 - COCC.COAL/01 ALLOCATED
-556- OPENED COAL 56 28332 11/12/83 17 59 02
1 GOODRICH MOBERLY AREA GETHING COAL SEAMS- RAW HEAD COMPOSITES
12/12/83

* DATA SOURCE	SAMP ID	SAMP TYPE	SEAM ID	HEAD SAMP ID	RES MOIST %	ASH %	VM %	FC %	TS %	SPG	FSI	CAL MJ-KG	PHOS %	CL %	HGI	NOTES
***																
* DDH83003	7	COMP	9	HD1	96	7 46	21 33	70 25	49	1 34	3 0	32 47	057	49	83 0	
*	8	COMP	10	HD1	59	19 11	19 48	60 82	52	1 41	6 5	28 99	014	58		

08.55 00 12/12/83 END SYSTEM 2000 - RELEASE 10 1

12/12/83 10.38:57 BEGIN SYSTEM 2000 - RELEASE 10 1

USER,X ECHO OFF

***** GEX - 03 01 - COCC COAL/01 ALLOCATED

-556- OPENED . COAL 56 28358 12/12/83 10 10 39

1 GOODRICH MOBERLY GETHING COAL - ASH MINERAL ANALYSES OF COMPOSITES

12/12/83

*	DRILL HOLE	SEAM ID	COMP SAMPLE ID	SP ID	SIO2 %	AL203 %	FE203 %	CAO %	MGO %	TIO2 %	NA20 %	K20 %	SO3 %	P205 %
***														
*	DDH83001	5	2	SP1	53 16	26 26	7 31	2 96	1 40	60	1 44	55	2 93	1 24
*		4	10	SP1	55 07	27 75	2 49	1 80	58	1 14	74	1 20	1 14	5 91
*	DDH83003	9	7	SP1	42 44	10 48	11 66	12 93	6 16	31	97	47	10 09	1 73

10 39 01 12/12/83 END SYSTEM 2000 - RELEASE 10 1

12/12/83 10.29:13 BEGIN SYSTEM 2000 - RELEASE 10 1

USER.X ECHO OFF
***** GEX - 03 01 - COCC COAL/01 ALLOCATED
-556- OPENED COAL 56 28358 12/12/83 10 10 39
1 GOODRICH MOBERLY GETHING COAL-ASH FUSION
12/12/83

* DATA SOURCE ***	SAMPLE ID	SP ID	OXID INITIAL TEMP	OXID SOFT TEMP	OXID HEMISPH TEMP	OXID FLUID TEMP	REDUC INITIAL TEMP	REDUC SOFT TEMP	REDUC HEMISPH TEMP	REDUC FLUID TEMP
* DDH83001	2	SP1	1454 0	1454 0	1454 0	1454 0	1454 0	1454 0	1454 0	1454 0
*	10	SP1	1454 0	1454 0	1454 0	1454 0	1454 0	1454 0	1454 0	1454 0
* DDH83003	7	SP1	1240 0	1243 0	1254 0	1265 0	1223 0	1232 0	1237 0	1251 0

10.29.22 12/12/83 END SYSTEM 2000 - RELEASE 10 1

FORM 0001

12/12/83 10·47 48 BEGIN SYSTEM 2000 - RELEASE 10 1

USER.X ECHO OFF.
***** GEX - 03 01 - COCC COAL/01 ALLOCATED
-556- OPENED COAL 56 28358 12/12/83 10 10 39
1 GOODRICH MOBERLY GETHING COAL- ULTIMATE ANALYSES
12/12/83

*	DRILL HOLE	SEAM ID	COMP ID	SAMPLE PRODUCT ID	C %	H %	N %	O %	S %	ASH %
***										
*	DDH83001	5	2	SP1	82 74	4 20	1 04	5 23	37	6 42
*		4	10	SP1	78 84	4 33	1 09	4 54	82	10 38
*	DDH83003	9	7	SP1	78 18	3 92	1 20	8 68	49	7 53

10 47 52 12/12/83 END SYSTEM 2000 - RELEASE 10 1

FORM 0001

Appendix 1 - 6

Raw Head Trench Samples

Coal Quality - Proximate Analysis

12/13/83 10:11 50 BEGIN SYSTEM 2000 - RELEASE 10 1

USER,X ECHO OFF
***** GEX - 03 01 - COCC COAL/01 ALLOCATED
-556- OPENED COAL 56 29282 13/12/83 10 08 43
1 GOODRICH MOBERLY AREA GETHING COAL SEAMS- RAW HEAD COMPOSITES
13/12/83

* DATA SOURCE	SAMP ID	SAMP TYPE	SEAM ID	HEAD SAMP ID	RES MOIST %	ASH %	VM %	FC %	TS %	SPG	FSI	CAL MJ-KG	PHOS %	CL %	HGI	NOTES
***																
* TRC82016	2005		19	HD1	7 09	11 99	29 55	51 37	45	1 48	0	21 95				
*	2006		19	HD1	7 72	10 48	28 98	52 82	35	1 48	0	21 80				

10 11 52 12/13/83 END SYSTEM 2000 - RELEASE 10 1

12/05/83 16:01:47 BEGIN SYSTEM 2000 - RELEASE 10.1

USER,X:ECHO OFF:
-556- OPENED .COAL 56 28154 05/12/83 14 23:36
1 GOODRICH MOBERLY AREA GETHING COAL SEAMS- RAW HEAD COMPOSITES
05/12/83

* DATA SOURCE	SAMPLE ID	SAMPLE TYPE	SEAM ID	HEAD SAMPLE ID	RES MOIST %	ASH %	VM %	FC %	TOTAL SULPHUR %	SPG	FSI	CAL MJ-KG	NOTES
***													
* TRC83002	2279	SIMP	10	HD1	3 35	5 23	22 27	69 15	48			30 51	
* TRC83022	2278	SIMP	19	HD1	6 19	17 46	26 84	49 51	37			20 74	
* TRC83034	2272	SIMP	26	HD1	4 73	14.29	19 94	61.04	.51			26 57	
* TRC83035	2273	SIMP	13	HD1	6.49	8 50	22.04	62.97	52			26.72	
* TRC83037	2274	SIMP	19	HD1	3.09	12.14	21 31	63.46	99			28 52	
*	2275	SIMP	19	HD1	5 09	30 08	20 13	44 70	.78			20 74	
* TRC83038	2276	SIMP	19	HD1	6 35	21 09	19 40	53 16	67			23.47	

16 02 01 12/05/83 END SYSTEM 2000 - RELEASE 10 1

FORM 0001

Appendix 2

COAL SEAM & RESOURCE DATA

Appendix 2

Table of Contents

Moberly Prospect:

- Resource Summary
- Data Source Summary
- Seam Summary
- Resource Calculation Tables

Goodrich South Table Area:

- Resource Summary
- Resource Calculation Tables

MOBERLY RESOURCE SUMMARY November 1983

SECTION	CRASSIER (tonnes) Seams >=.5m	Seams >=1m	Seams >=2m	FISHER (tonnes) Seams >=.5m	Seams >=1m	Seams >=2m
1000S	15863850	15863850	10939500			
0000	876992	795564	252583			
1000N	16366950	13648800	8302500			
2000N	47932350	38481600	24761400	7020405	4069695	2538900
3000N	51793650	40875000	26150400			
4000N	39866175	31471200	19879500	3909600	2719350	1395000
5000N	30494700	24440100	12904800	12508650	7929150	3696750
6000N	22536900	17747700	9772650			
7000N	31812000	25515000	14773200	35220450	25037550	13578450
8000N	32691675	26171475	14853225	61478550	41043300	21822000
9000N	38443152	32552148	18024728	43479809	28245517	14259690
10000N	38917603	32572536	19025073	5575320	3501150	1304325
11000N	41311858	33867835	19576987			
12000N	50561850	41731800	23428650	545325	244200	0
13000N	53112644	43748780	25217606	1811850	1073250	0
14000N	51517950	42852750	23740950			
15000N	49635825	40955400	17161200			
16000N	44526600	36191700	15260700			
17000N	44113950	36505950	15345300			
18000N	33506100	27101700	12005700			
19000N	22880756	18410535	8177771			
20000N	27300423	21541974	10559535			
TOTAL:	786063954	643043397	350113958	171549959	113863162	58595115

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TOTAL FROM SEAMS >= 0.5M : 957613913 tonnes

TOTAL FROM SEAMS >= 1.0M : 756906560 tonnes

TOTAL FROM SEAMS >= 2.0M : 408709073 tonnes

MOBERLY DATA SOURCE SUMMARY

DATA SOURCE (GDR-MB-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM NO.	REFER TO SECTION:	USED IN RES CALC? Y/N	IF Y, WHICH REGION? F/C
TRC-81001	Kgt	3.60	/	4.09	19	10000N	N	
TRC-81002	Kgt	4.94	/	5.07	19	10000N	N	
TRC-81003	Kgt	0.86	/	1.35	17	9000N	N	
TRC-81004	Kgt	0.57	/	0.68	17	9000N	N	
TRC-81005	Kgt	1.25	/	1.75	14	10000N	Y	C
TRC-81006	Kgt	1.52	/	1.60	21	10000N	N	
TRC-81007	Kgt	1.05	/	1.33	7	8000N	N	
TRC-81008	Kgt	0.74	/	1.36	7	8000N	N	
TRC-81009	Kgt	3.91	/	4.12	5	8000N	N	
TRC-81010	Kgt	1.88	/	1.88	8	8000N	N	
TRC-81011	Kgt	1.02	/	1.11	14	8000N	N	
TRC-81012	Kgt	1.00	/	1.00	13	9000N	N	
TRC-82001	Kgt	1.15	/	1.15	13	10000N	Y	C
TRC-82002	Kgt	0.76	/	0.76	26	7000N	N	
TRC-82003	Kgt	0.65	/	0.73	27	7000N	N	
TRC-82004	Kdr	1.10	/	1.10	-	7000N	N	
TRC-82005	Kgt	0.21	/	0.21	11	3000N	N	
TRC-82006	Kgt	1.08	/	1.28	12	5000N	N	
TRC-82007	JKb	0.79	/	0.81	-	9000N	N	
TRC-82008	Kgt	0.51	/	0.55	27	9000N	N	
TRC-82009	JKh	0.26	/	0.26	-	9000N	N	
TRC-82009	JKb	0.18	/	0.18	-	9000N	N	
TRC-82010	Kgt	1.33	/	2.18	26	9000N	N	
TRC-82011	Kgt	1.27	/	1.27	17	9000N	N	
TRC-82012	Kgt	0.35	/	0.35	17	9000N	N	
TRC-82013	Kgt	0.24	/	0.24	14	15000N	N	
TRC-82014	Kgt	1.92	/	1.92	26	16000N	Y	C
TRC-82015	Kgt	5.81	/	6.26	13	0000	N	
TRC-82016	Kgt	2.38	/	2.91	19	10000N	N	
TRC-82017	Kdr	1.82	/	1.90	-	10000N	N	
TRC-82018	Kgt	2.45	/	2.45	13	8000N	N	
TRC-83001	Kgt	0.90	/	1.51	26	19000N	Y	C
TRC-83002	Kgt	2.94	/	3.01	10	19000N	N	
TRC-83003	JKb	1.10	/	1.25	-	3000N	N	
TRC-83004	Kgt	0.59	/	0.68	13	1000N	N	
TRC-83004	Kgt	0.63	/	0.63	13	1000N	N	
TRC-83004	Kgt	0.73	/	1.02	14	1000N	N	
TRC-83004	Kgt	0.65	/	0.65	14	1000N	N	
TRC-83005	Kgt	0.77	/	0.77	20	1000N	N	
TRC-83005	Kgt	0.82	/	0.96	21	1000N	N	
TRC-83005	Kgt	2.29	/	2.29	22	1000N	N	
TRC-83005	Kgt	1.15	/	1.15	23	1000N	N	
TRC-83005	Kgt	3.23	/	3.74	24	1000N	N	

TRC-83006	Kgt	1.15 /	1.15	6	0000N	Y	C
TRC-83007	Kgt	2.83 /	3.10	19	1000S	N	
TRC-83008	Kgt	2.57 /	2.57	5	0000N	Y	C
TRC-83009	Kgt	0.57 /	0.57	11	0000N	Y	C
TRC-83010	Kgt	1.38 /	1.38	13	0000N	Y	C
TRC-83011	Kgt	0.62 /	0.62	18	1000S	N	
TRC-83012	Kgt	1.27 /	1.27	17	1000S	Y	C
TRC-83013	Kgt	0.79 /	1.06	17	1000S	N	
TRC-83014	Kgt	0.70 /	0.70	25	10000N	Y	C
TRC-83015	Kgt	1.40 /	1.40	17	1000S	N	
TRC-83016	Kgt	0.95 /	0.95	27	10000N	N	
TRC-83017	Kgt	2.19 /	3.16	26	10000N	N	
TRC-83018	Kgt	2.32 /	2.57	26	10000N	Y	C
TRC-83019	Kgt	1.71 /	1.71	24	10000N	Y	C
TRC-83020	Kgt	0.75 /	0.75	17	1000S	N	
TRC-83021	Kgt	0.94 /	0.94	18	1000S	Y	F,C
TRC-83022	Kgt	4.12 /	4.39	19	10000N	Y	C
TRC-83023	Kgt	1.40 /	2.13	24	10000N	N	
TRC-83024	Kgt	1.98 /	2.03	19	1000S	Y	C
TRC-83024	Kgt	0.42 /	0.42	20	1000S	N	
TRC-83026	Kgt	1.12 /	1.55	13	0000N	N	
TRC-83027	Kgt	1.98 /	2.15	14	0000N	N	
TRC-83028	Kgt	2.21 /	2.58	4	0000N	Y	F
TRC-83029	Kgt	0.43 /	0.43	18	10000N	N	
TRC-83030	Kdr	1.02 /	1.02	-	7000N	N	
TRC-83031	Kgt	1.11 /	1.43	13	8000N	Y	F
TRC-83032	Kgt	0.48 /	0.70	20	4000N	N	
TRC-83033	Kgt	2.50 /	3.07	19	4000N	Y	C
TRC-83034	Kgt	1.80 /	1.85	26	8000N	Y	F
TRC-83035	Kgt	1.80 /	1.80	13	8000N	N	
TRC-83036	Kgt	1.16 /	1.16	12	9000N	N	
TRC-83037	Kgt	3.60 /	4.34	19	8000N	N	
TRC-83038	Kgt	4.40 /	4.65	19	8000N	Y	F
TRC-83039	Kgt	0.65 /	0.65	17	8000N	N	
TRC-83041	Kgt	4.72 /	5.50	19	1000N	N	
TRC-83042	Kgt	5.19 /	7.94	5	4000N	Y	F
TRC-83042	Kgt	2.15 /	2.81	5	4000N	N	
TRC-83042	Kgt	4.38 /	5.75	5	4000N	N	
TRC-83043	Kgt	0.53 /	0.53	14	0000N	Y	F,C
TRC-83044	Kgt	1.11 /	1.11	13	0000N	Y	C
TRC-83045	Kgt	8.80 /	9.24	19	0000N	N	
TRC-83045	Kgt	0.68 /	0.79	20	0000N	Y	F
TRC-83046	Kgt	0.56 /	0.56	23	0000N	Y	F
TRC-83047	Kgt	1.07 /	1.07	22	0000N	Y	F
TRC-83048	Kgt	0.96 /	0.96	21	0000N	Y	F
TRC-83049	Kgt	0.62 /	0.62	10	0000N	Y	F
TRC-83050	Kgt	0.58 /	0.87	15	1000S	Y	F,C
TRC-83050	Kgt	0.89 /	0.89	16	1000S	Y	F,C
TRC-83051	Kgt	1.16 /	1.26	22	1000S	N	
TRC-83052	Kdr	0.62 /	0.62	-	9000N	N	
TRC-83053	Kgt	0.69 /	0.73	27	9000N	Y	F
TRC-83054	Kgt	4.00 /	4.00	19	10000N	N	
TRC-83055	Kdr	0.51 /	0.65	-	4000N	N	
TRC-83056	Kgt	1.03 /	1.03	17	1000S	Y	F,C

DDH-81012	Kgt	2.71 / 3.22	5	8000N	Y	F
DDH-81012	Kgt	0.45 / 0.45	6	8000N	N	
DDH-81012	Kgt	1.04 / 1.04	7	8000N	Y	F
DDH-81012	Kgt	1.70 / 1.70	8	8000N	Y	F
DDH-81012	Kgt	1.47 / 2.12	9	8000N	Y	F
DDH-81012	Kgt	0.22 / 0.22	10	8000N	N	
DDH-81012	Kgt	0.16 / 0.16	11	8000N	N	
DDH-81012	Kgt	0.56 / 0.65	12	8000N	Y	F
DDH-81012	Kgt	1.03 / 1.08	13	8000N	Y	F
DDH-81012	Kgt	0.59 / 0.93	14	8000N	Y	F
DDH-81012	Kgt	0.32 / 0.32	16	8000N	N	
DDH-81012	Kgt	0.53 / 0.53	17	8000N	Y	F
DDH-83001	Kgt	0.44 / 0.69	1	2000N	N	
DDH-83001	Kgt	0.61 / 0.82	2	2000N	Y	C
DDH-83001	Kgt	0.60 / 0.60	3	2000N	Y	C
DDH-83001	Kgt	0.72 / 0.87	4	2000N	Y	C
DDH-83001	Kgt	5.41 / 5.96	5	2000N	Y	C
DDH-83001	Kgt	0.38 / 0.42	6	2000N	N	
DDH-83002	Kgt	1.91 / 2.54	18	1000N	Y	C
DDH-83002	Kgt	3.08 / 3.58	19	1000N	Y	C
DDH-83002	Kgt	0.26 / 0.60	20	1000N	N	
DDH-83002	Kgt	0.91 / 1.63	21	1000N	Y	C
DDH-83002	Kgt	0.15 / 0.27	22	1000N	N	
DDH-83002	Kgt	0.45 / 0.45	23	1000N	N	
DDH-83002	Kgt	0.16 / 0.65	24	1000N	N	
DDH-83002	Kgt	0.13 / 0.13	26	1000N	N	
DDH-83003	Kgt	0.78 / 0.78	7	1000N	Y	C
DDH-83003	Kgt	0.32 / 0.32	8	1000N	N	
DDH-83003	Kgt	1.98 / 1.98	9	1000N	Y	C
DDH-83003	Kgt	1.07 / 1.07	10	1000N	Y	C
DDH-83003	Kgt	0.21 / 0.21	11	1000N	N	
DDH-83003	Kgt	0.21 / 0.21	12	1000N	N	

MOBERLY SEAM SUMMARY

DATA SOURCE (GDR-MB-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM NO.	REFER TO SECTION:	USED IN RES CALC? Y/N	IF Y, WHICH REGION? F/C
DDH-83001	Kgt	0.44	/	0.69	1	2000N	N	
DDH-83001	Kgt	0.61	/	0.82	2	2000N	Y	C
DDH-83001	Kgt	0.60	/	0.60	3	2000N	Y	C
TRC-83028	Kgt	2.21	/	2.58	4	0000N	Y	F
DDH-83001	Kgt	0.72	/	0.87	4	2000N	Y	C
TRC-81009	Kgt	3.91	/	4.12	5	8000N	N	
TRC-83008	Kgt	2.57	/	2.57	5	0000N	Y	C
TRC-83042	Kgt	5.19	/	7.94	5	4000N	Y	F
TRC-83042	Kgt	2.15	/	2.81	5	4000N	N	
TRC-83042	Kgt	4.38	/	5.75	5	4000N	N	
DDH-81012	Kgt	2.71	/	3.22	5	8000N	Y	F
DDH-83001	Kgt	5.41	/	5.96	5	2000N	Y	C
TRC-83006	Kgt	1.15	/	1.15	6	0000N	Y	C
DDH-81012	Kgt	0.45	/	0.45	6	8000N	N	
DDH-83001	Kgt	0.38	/	0.42	6	2000N	N	
TRC-81007	Kgt	1.05	/	1.33	7	8000N	N	
TRC-81008	Kgt	0.74	/	1.36	7	8000N	N	
DDH-81012	Kgt	1.04	/	1.04	7	8000N	Y	F
DDH-83003	Kgt	0.78	/	0.78	7	1000N	Y	C
TRC-81010	Kgt	1.88	/	1.88	8	8000N	N	
DDH-81012	Kgt	1.70	/	1.70	8	8000N	Y	F
DDH-83003	Kgt	0.32	/	0.32	8	1000N	N	
DDH-81012	Kgt	1.47	/	2.12	9	8000N	Y	F
DDH-83003	Kgt	1.98	/	1.98	9	1000N	Y	C
TRC-83002	Kgt	2.94	/	3.01	10	19000N	N	
TRC-83049	Kgt	0.62	/	0.62	10	0000N	Y	F
DDH-81012	Kgt	0.22	/	0.22	10	8000N	N	
DDH-83003	Kgt	1.07	/	1.07	10	1000N	Y	C
TRC-82005	Kgt	0.21	/	0.21	11	3000N	N	
TRC-83009	Kgt	0.57	/	0.57	11	0000N	Y	C
DDH-81012	Kgt	0.16	/	0.16	11	8000N	N	
DDH-83003	Kgt	0.21	/	0.21	11	1000N	N	
TRC-82006	Kgt	1.08	/	1.28	12	5000N	N	
TRC-83036	Kgt	1.16	/	1.16	12	9000N	N	
DDH-81012	Kgt	0.56	/	0.65	12	8000N	Y	F
DDH-83003	Kgt	0.21	/	0.21	12	1000N	N	
TRC-81012	Kgt	1.00	/	1.00	13	9000N	N	
TRC-82001	Kgt	1.15	/	1.15	13	10000N	Y	C
TRC-82015	Kgt	5.81	/	6.26	13	0000	N	
TRC-82018	Kgt	2.45	/	2.45	13	8000N	N	
TRC-83004	Kgt	0.59	/	0.68	13	1000N	N	
TRC-83004	Kgt	0.63	/	0.63	13	1000N	N	
TRC-83010	Kgt	1.38	/	1.38	13	0000N	Y	C
TRC-83026	Kgt	1.12	/	1.55	13	0000N	N	
TRC-83031	Kgt	1.11	/	1.43	13	8000N	Y	F
TRC-83035	Kgt	1.80	/	1.80	13	8000N	N	

TRC-83044	Kgt	1.11 / 1.11	13	0000N	Y	C
DDH-81012	Kgt	1.03 / 1.08	13	8000N	Y	F
TRC-81005	Kgt	1.25 / 1.75	14	10000N	Y	C
TRC-81011	Kgt	1.02 / 1.11	14	8000N	N	
TRC-82013	Kgt	0.24 / 0.24	14	15000N	N	
TRC-83004	Kgt	0.73 / 1.02	14	1000N	N	
TRC-83004	Kgt	0.65 / 0.65	14	1000N	N	
TRC-83027	Kgt	1.98 / 2.15	14	0000N	N	
TRC-83043	Kgt	0.53 / 0.53	14	0000N	Y	F,C
DDH-81012	Kgt	0.59 / 0.93	14	8000N	Y	F
TRC-83050	Kgt	0.58 / 0.87	15	1000S	Y	F,C
TRC-83050	Kgt	0.89 / 0.89	16	1000S	Y	F,C
DDH-81012	Kgt	0.32 / 0.32	16	8000N	N	
TRC-81003	Kgt	0.86 / 1.35	17	9000N	N	
TRC-81004	Kgt	0.57 / 0.68	17	9000N	N	
TRC-82011	Kgt	1.27 / 1.27	17	9000N	N	
TRC-82012	Kgt	0.35 / 0.35	17	9000N	N	
TRC-83012	Kgt	1.27 / 1.27	17	1000S	Y	C
TRC-83013	Kgt	0.79 / 1.06	17	1000S	N	
TRC-83015	Kgt	1.40 / 1.40	17	1000S	N	
TRC-83020	Kgt	0.75 / 0.75	17	1000S	N	
TRC-83039	Kgt	0.65 / 0.65	17	8000N	N	
TRC-83056	Kgt	1.03 / 1.03	17	1000S	Y	F,C
DDH-81012	Kgt	0.53 / 0.53	17	8000N	Y	F
TRC-83011	Kgt	0.62 / 0.62	18	1000S	N	
TRC-83021	Kgt	0.94 / 0.94	18	1000S	Y	F,C
TRC-83029	Kgt	0.43 / 0.43	18	10000N	N	
DDH-83002	Kgt	1.91 / 2.54	18-	1000N	Y	C
TRC-81001	Kgt	3.60 / 4.09	19	10000N	N	
TRC-81002	Kgt	4.94 / 5.07	19	10000N	N	
TRC-82016	Kgt	2.38 / 2.91	19	10000N	N	
TRC-83007	Kgt	2.83 / 3.10	19	1000S	N	
TRC-83022	Kgt	4.12 / 4.39	19	10000N	Y	C
TRC-83024	Kgt	1.98 / 2.03	19	1000S	Y	C
TRC-83033	Kgt	2.50 / 3.07	19	4000N	Y	C
TRC-83037	Kgt	3.60 / 4.34	19	8000N	N	
TRC-83038	Kgt	4.40 / 4.65	19	8000N	Y	F
TRC-83041	Kgt	4.72 / 5.50	19	1000N	N	
TRC-83045	Kgt	8.80 / 9.24	19	0000N	N	
TRC-83054	Kgt	4.00 / 4.00	19	10000N	N	
DDH-83002	Kgt	3.08 / 3.58	19-	1000N	Y	C
TRC-83005	Kgt	0.77 / 0.77	20	1000N	N	
TRC-83024	Kgt	0.42 / 0.42	20	1000S	N	
TRC-83032	Kgt	0.48 / 0.70	20	4000N	N	
TRC-83045	Kgt	0.68 / 0.79	20	0000N	Y	F
DDH-83002	Kgt	0.26 / 0.60	20-	1000N	N	
TRC-81006	Kgt	1.52 / 1.60	21	10000N	N	
TRC-83005	Kgt	0.82 / 0.96	21	1000N	N	
TRC-83048	Kgt	0.96 / 0.96	21	0000N	Y	F
DDH-83002	Kgt	0.91 / 1.63	21-	1000N	Y	C
TRC-83005	Kgt	2.29 / 2.29	22	1000N	N	
TRC-83047	Kgt	1.07 / 1.07	22	0000N	Y	F
TRC-83051	Kgt	1.16 / 1.26	22	1000S	N	
DDH-83002	Kgt	0.15 / 0.27	22-	1000N	N	

TRC-83005	Kgt	1.15 / 1.15	23	1000N	N	
TRC-83046	Kgt	0.56 / 0.56	23	0000N	Y	F
DDH-83002	Kgt	0.45 / 0.45	23	1000N	N	
TRC-83005	Kgt	3.23 / 3.74	24	1000N	N	
TRC-83019	Kgt	1.71 / 1.71	24	10000N	Y	C
TRC-83023	Kgt	1.40 / 2.13	24	10000N	N	
DDH-83002	Kgt	0.16 / 0.65	24	1000N	N	
TRC-83014	Kgt	0.70 / 0.70	25	10000N	Y	C
TRC-82002	Kgt	0.76 / 0.76	26	7000N	N	
TRC-82010	Kgt	1.33 / 2.18	26	9000N	N	
TRC-82014	Kgt	1.92 / 1.92	26	16000N	Y	C
TRC-83001	Kgt	0.90 / 1.51	26	19000N	Y	C
TRC-83017	Kgt	2.19 / 3.16	26	10000N	N	
TRC-83018	Kgt	2.32 / 2.57	26	10000N	Y	C
TRC-83034	Kgt	1.80 / 1.85	26	8000N	Y	F
DDH-83002	Kgt	0.13 / 0.13	26	1000N	N	
TRC-82003	Kgt	0.65 / 0.73	27	7000N	N	
TRC-82008	Kgt	0.51 / 0.55	27	9000N	N	
TRC-83016	Kgt	0.95 / 0.95	27	10000N	N	
TRC-83053	Kgt	0.69 / 0.73	27	9000N	Y	F
TRC-82004	Kdr	1.10 / 1.10	-	7000N	N	
TRC-82007	JKb	0.79 / 0.81	-	9000N	N	
TRC-82009	JKb	0.26 / 0.26	-	9000N	N	
TRC-82009	JKb	0.18 / 0.18	-	9000N	N	
TRC-82017	Kdr	1.82 / 1.90	-	10000N	N	
TRC-83003	JKb	1.10 / 1.25	-	3000N	N	
TRC-83030	Kdr	1.02 / 1.02	-	7000N	N	
TRC-83052	Kdr	0.62 / 0.62	-	9000N	N	
TRC-83055	Kdr	0.51 / 0.65	-	4000N	N	

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 1000S

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
17	TRC-83056	1.03 / 1.03	1130	1000	1745850.0	1745850.0	
18	DDH-83002	1.91 / 2.54	1300	1000	4953000.0	4953000.0	4953000.0
19	TRC-83033	2.50 / 3.07	1300	1000	5986500.0	5986500.0	5986500.0
21	DDH-83002	0.91 / 1.63	1300	1000	3178500.0	3178500.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			15863850.0	15863850.0	10939500.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 0000

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
17	TRC-83056	1.03 / 1.03	70	550	59482.5	59482.5	
18	TRC-83021	0.94 / 0.94	105	550	81427.5		
19	TRC-83024	1.98 / 2.03	150	553	252582.8	252582.8	252582.8
21	DDH-83002	0.91 / 1.63	350	565	483498.8	483498.8	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			876991.5	795564.0	252582.8

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 1000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	70	1000	86100.0		
3	DDH-83001	0.60 / 0.60	70	1000	63000.0		
4	DDH-83001	0.72 / 0.87	70	1000	91350.0		
5	DDH-83001	5.41 / 5.96	120	1000	1072800.0	1072800.0	1072800.0
7	DDH-83003	0.78 / 0.78	230	1000	269100.0		
9	DDH-83003	1.98 / 1.98	280	1000	831600.0	831600.0	
10	DDH-83003	1.07 / 1.07	310	1000	497550.0	497550.0	
13	TRC-83010	1.11 / 1.11	450	1000	749250.0	749250.0	
14	TRC-83043	0.53 / 0.53	520	1000	413400.0		
15	TRC-83050	0.58 / 0.87	680	1000	887400.0		
16	TRC-83050	0.89 / 0.89	680	1000	907800.0		
17	TRC-83056	1.03 / 1.03	770	1000	1189650.0	1189650.0	
18	DDH-83002	1.91 / 2.54	770	1000	2933700.0	2933700.0	2933700.0
19	DDH-83002	3.08 / 3.58	800	1000	4296000.0	4296000.0	4296000.0
21	DDH-83002	0.91 / 1.63	850	1000	2078250.0	2078250.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			16366950.0	13648800.0	8302500.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 2000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61	/	0.82	880	1000	1082400.0		
3	DDH-83001	0.60	/	0.60	880	1000	792000.0		
4	DDH-83001	0.72	/	0.87	880	1000	1148400.0		
5	DDH-83001	5.41	/	5.96	1250	1000	11175000.0	11175000.0	11175000.0
7	DDH-83003	0.78	/	0.78	1210	1000	1415700.0		
9	DDH-83003	1.98	/	1.98	1200	1000	3564000.0	3564000.0	
10	DDH-83003	1.07	/	1.07	1300	1000	2086500.0	2086500.0	
13	TRC-83010	1.11	/	1.11	1300	1000	2164500.0	2164500.0	
14	TRC-83043	0.53	/	0.53	1390	1000	1105050.0		
15	TRC-83050	0.58	/	0.87	1480	1000	1931400.0		
16	TRC-83050	0.89	/	0.89	1480	1000	1975800.0		
17	TRC-83056	1.03	/	1.03	1480	1000	2286600.0	2286600.0	
18	DDH-83002	1.91	/	2.54	1480	1000	5638800.0	5638800.0	5638800.0
19	DDH-83002	3.08	/	3.58	1480	1000	7947600.0	7947600.0	7947600.0
21	DDH-83002	0.91	/	1.63	1480	1000	3618600.0	3618600.0	
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			47932350.0	38481600.0	24761400.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 3000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	1150	1000	1414500.0		
3	DDH-83001	0.60 / 0.60	1150	1000	1035000.0		
4	DDH-83001	0.72 / 0.87	1150	1000	1500750.0		
5	DDH-83001	5.41 / 5.96	1200	1000	10728000.0	10728000.0	10728000.0
7	DDH-83003	0.78 / 0.78	1200	1000	1404000.0		
9	DDH-83003	1.98 / 1.98	1200	1000	3564000.0	3564000.0	
10	DDH-83003	1.07 / 1.07	1250	1000	2006250.0	2006250.0	
13	TRC-83010	1.11 / 1.11	1500	1000	2497500.0	2497500.0	
14	TRC-83043	0.53 / 0.53	1520	1000	1208400.0		
15	TRC-83050	0.58 / 0.87	1650	1000	2153250.0		
16	TRC-83050	0.89 / 0.89	1650	1000	2202750.0		
17	TRC-83056	1.03 / 1.03	1650	1000	2549250.0	2549250.0	
18	DDH-83002	1.91 / 2.54	1680	1000	6400800.0	6400800.0	6400800.0
19	DDH-83002	3.08 / 3.58	1680	1000	9021600.0	9021600.0	9021600.0
21	DDH-83002	0.91 / 1.63	1680	1000	4107600.0	4107600.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			51793650.0	40875000.0	26150400.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 4000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	970	1000	1193100.0		
3	DDH-83001	0.60 / 0.60	970	1000	873000.0		
4	DDH-83001	0.72 / 0.87	970	1000	1265850.0		
5	DDH-83001	5.41 / 5.96	1000	1000	8940000.0	8940000.0	8940000.0
7	DDH-83003	0.78 / 0.78	1020	1000	1193400.0		
9	DDH-83003	1.98 / 1.98	1050	1000	3118500.0	3118500.0	
10	DDH-83003	1.07 / 1.07	1070	1000	1717350.0	1717350.0	
13	TRC-83010	1.11 / 1.11	1100	1000	1831500.0	1831500.0	
14	TRC-83043	0.53 / 0.53	1115	1000	886425.0		
15	TRC-83050	0.58 / 0.87	1130	1000	1474650.0		
16	TRC-83050	0.89 / 0.89	1130	1000	1508550.0		
17	TRC-83056	1.03 / 1.03	1130	1000	1745850.0	1745850.0	
18	DDH-83002	1.91 / 2.54	1300	1000	4953000.0	4953000.0	4953000.0
19	TRC-83033	2.50 / 3.07	1300	1000	5986500.0	5986500.0	5986500.0
21	DDH-83002	0.91 / 1.63	1300	1000	3178500.0	3178500.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			39866175.0	31471200.0	19879500.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 5000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	700	1000	861000.0		
3	DDH-83001	0.60 / 0.60	700	1000	630000.0		
4	DDH-83001	0.72 / 0.87	700	1000	913500.0		
5	DDH-83001	5.41 / 5.96	800	1000	7152000.0	7152000.0	7152000.0
7	DDH-83003	0.78 / 0.78	930	1000	1088100.0		
9	DDH-83003	1.98 / 1.98	900	1000	2673000.0	2673000.0	
10	DDH-83003	1.07 / 1.07	820	1000	1316100.0	1316100.0	
13	TRC-82001	1.15 / 1.15	780	1000	1345500.0	1345500.0	
14	TRC-81005	1.25 / 1.75	720	1000	1890000.0	1890000.0	
15	TRC-83050	0.58 / 0.87	700	1000	913500.0		
16	TRC-83050	0.89 / 0.89	700	1000	934500.0		
17	TRC-83056	1.03 / 1.03	680	1000	1050600.0	1050600.0	
19	TRC-83033	2.50 / 3.07	680	1000	3131400.0	3131400.0	3131400.0
21	DDH-83002	0.91 / 1.63	620	1000	1515900.0	1515900.0	
24	TRC-83019	1.71 / 1.71	680	1000	1744200.0	1744200.0	
25	TRC-83014	0.70 / 0.70	680	1000	714000.0		
26	TRC-83018	2.32 / 2.57	680	1000	2621400.0	2621400.0	2621400.0
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			30494700.0	24440100.0	12904800.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 6000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61	/	0.82	700	1000	861000.0		
3	DDH-83001	0.60	/	0.60	700	1000	630000.0		
4	DDH-83001	0.72	/	0.87	700	1000	913500.0		
5	DDH-83001	5.41	/	5.96	700	1000	6258000.0	6258000.0	6258000.0
7	DDH-83003	0.78	/	0.78	700	1000	819000.0		
9	DDH-83003	1.98	/	1.98	700	1000	2079000.0	2079000.0	
10	DDH-83003	1.07	/	1.07	680	1000	1091400.0	1091400.0	
13	TRC-82001	1.15	/	1.15	520	1000	897000.0	897000.0	
14	TRC-81005	1.25	/	1.75	480	1000	1260000.0	1260000.0	
15	TRC-83050	0.58	/	0.87	430	1000	561150.0		
16	TRC-83050	0.89	/	0.89	430	1000	574050.0		
17	TRC-83056	1.03	/	1.03	400	1000	618000.0	618000.0	
19	TRC-83033	2.50	/	3.07	420	1000	1934100.0	1934100.0	1934100.0
21	DDH-83002	0.91	/	1.63	400	1000	978000.0	978000.0	
24	TRC-83019	1.71	/	1.71	410	1000	1051650.0	1051650.0	
25	TRC-83014	0.70	/	0.70	410	1000	430500.0		
26	TRC-83018	2.32	/	2.57	410	1000	1580550.0	1580550.0	1580550.0
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			22536900.0	17747700.0	9772650.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 7000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61	/	0.82	820	1000	1008600.0		
3	DDH-83001	0.60	/	0.60	820	1000	738000.0		
4	DDH-83001	0.72	/	0.87	820	1000	1070160.0		
5	DDH-83001	5.41	/	5.96	800	1000	7152000.0	7152000.0	7152000.0
7	DDH-83003	0.78	/	0.78	740	1000	865800.0		
9	DDH-83003	1.98	/	1.98	710	1000	2108700.0	2108700.0	
10	DDH-83003	1.07	/	1.07	680	1000	1091400.0	1091400.0	
13	TRC-82001	1.15	/	1.15	650	1000	1121250.0	1121250.0	
14	TRC-81005	1.25	/	1.75	690	1000	1811250.0	1811250.0	
15	TRC-83050	0.58	/	0.87	700	1000	913500.0		
16	TRC-83050	0.89	/	0.89	700	1000	934500.0		
17	TRC-83056	1.03	/	1.03	730	1000	1127850.0	1127850.0	
19	TRC-83022	4.12	/	4.39	730	1000	4807050.0	4807050.0	4807050.0
21	DDH-83002	0.91	/	1.63	700	1000	1711500.0	1711500.0	
24	TRC-83019	1.71	/	1.71	690	1000	1769850.0	1769850.0	
25	TRC-83014	0.70	/	0.70	730	1000	766500.0		
26	TRC-83018	2.32	/	2.57	730	1000	2814150.0	2814150.0	2814150.0
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			31812000.0	25515000.0	14773200.0

MODERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 8000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61	/	0.82	850	1000	1045500.0		
3	DDH-83001	0.60	/	0.60	850	1000	765000.0		
4	DDH-83001	0.72	/	0.87	850	1000	1109250.0		
5	DDH-83001	5.41	/	5.96	820	1000	7330800.0	7330800.0	7330800.0
7	DDH-83003	0.78	/	0.78	775	1000	906750.0		
9	DDH-83003	1.98	/	1.98	780	1000	2316600.0	2316600.0	
10	DDH-83003	1.07	/	1.07	710	1000	1139550.0	1139550.0	
13	TRC-82001	1.15	/	1.15	720	1000	1242000.0	1242000.0	
14	TRC-81005	1.25	/	1.75	725	1000	1903125.0	1903125.0	
15	TRC-83050	0.58	/	0.87	730	1000	952650.0		
16	TRC-83050	0.89	/	0.89	730	1000	974550.0		
17	TRC-83056	1.03	/	1.03	710	1000	1096950.0	1096950.0	
19	TRC-83022	4.12	/	4.39	715	1000	4708275.0	4708275.0	4708275.0
21	DDH-83002	0.91	/	1.63	720	1000	1760400.0	1760400.0	
24	TRC-83019	1.71	/	1.71	725	1000	1859625.0	1859625.0	
25	TRC-83014	0.70	/	0.70	730	1000	766500.0		
26	TRC-83018	2.32	/	2.57	730	1000	2814150.0	2814150.0	2814150.0
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			32691675.0	26171475.0	14853225.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 9000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61	/	0.82	440	1000	541200.0		
3	DDH-83001	0.60	/	0.60	440	1000	396000.0		
4	DDH-83001	0.72		0.87	440	1000	574200.0		
5	DDH-83001	5.41	/	5.96	580	1000	5185200.0	5185200.0	5185200.0
7	DDH-83003	0.78	/	0.78	620	1000	725400.0		
9	DDH-83003	1.98	/	1.98	640	1000	1900800.0	1900800.0	
10	DDH-83003	1.07	/	1.07	700	1000	1123500.0	1123500.0	
13	TRC-82001	1.15	/	1.15	850	1000	1466250.0	1466250.0	
14	TRC-81005	1.25	/	1.75	870	1000	2283750.0	2283750.0	
15	TRC-83050	0.58	/	0.87	890	1000	1161450.0		
16	TRC-83050	0.89	/	0.89	890	1000	1188150.0		
17	TRC-83056	1.03	/	1.03	1080	1000	1668600.0	1668600.0	
19	TRC-83022	4.12	/	4.39	1220	1002	8049767.4	8049767.4	8049767.4
21	DDH-83002	0.91	/	1.63	1200	993	2913462.0	2913462.0	
24	TRC-83019	1.71	/	1.71	1240	997	3171058.2	3171058.2	
25	TRC-83014	0.70	/	0.70	1240	1002	1304604.0		
26	TRC-83018	2.32	/	2.57	1240	1002	4789760.4	4789760.4	4789760.4

	SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
TOTAL TONNES THIS SECTION:	38443152.0	32552148.0	18024727.8

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 10000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61	/	0.82	600	1000	738000.0		
3	DDH-83001	0.60	/	0.60	600	1000	540000.0		
4	DDH-83001	0.72		0.87	600	1000	783000.0		
5	DDH-83001	5.41	/	5.96	580	1000	5185200.0	5185200.0	5185200.0
7	DDH-83003	0.78	/	0.78	520	1000	608400.0		
9	DDH-83003	1.98	/	1.98	500	1000	1485000.0	1485000.0	
10	DDH-83003	1.07	/	1.07	420	1000	674100.0	674100.0	
13	TRC-82001	1.15	/	1.15	600	1000	1035000.0	1035000.0	
14	TRC-81005	1.25	/	1.75	700	1000	1837500.0	1837500.0	
15	TRC-83050	0.58	/	0.87	720	1000	939600.0		
16	TRC-83050	0.89	/	0.89	720	1000	961200.0		
17	TRC-83056	1.03	/	1.03	950	1000	1467750.0	1467750.0	
19	TRC-83022	4.12	/	4.39	1120	993	7323573.6	7323573.6	7323573.6
21	DDH-83002	0.91	/	1.63	1400	971	3323733.0	3323733.0	
24	TRC-83019	1.71	/	1.71	1500	968	3724380.0	3724380.0	
25	TRC-83014	0.70	/	0.70	1770	955	1774867.5		
26	TRC-83018	2.32	/	2.57	1770	955	6516299.3	6516299.3	6516299.3
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			38917603.4	32572535.9	19025072.9

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 11000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	820	1000	1008600.0		
3	DDH-83001	0.60 / 0.60	820	1000	738000.0		
4	DDH-83001	0.72 / 0.87	820	1000	1070100.0		
5	DDH-83001	5.41 / 5.96	780	1000	6973200.0	6973200.0	6973200.0
7	DDH-83003	0.78 / 0.78	720	1000	842400.0		
9	DDH-83003	1.98 / 1.98	700	1000	2079000.0	2079000.0	
10	DDH-83003	1.07 / 1.07	730	1000	1171650.0	1171650.0	
13	TRC-82001	1.15 / 1.15	780	1000	1345500.0	1345500.0	
14	TRC-81005	1.25 / 1.75	750	1000	1968750.0	1968750.0	
15	TRC-83050	0.58 / 0.87	870	1000	1135350.0		
16	TRC-83050	0.89 / 0.89	870	1000	1161450.0		
17	TRC-83056	1.03 / 1.03	920	1000	1421400.0	1421400.0	
19	TRC-83022	4.12 / 4.39	1080	1000	7111800.0	7111800.0	7111800.0
21	DDH-83002	0.91 / 1.63	1280	970	3035712.0	3035712.0	
24	TRC-83019	1.71 / 1.71	1350	944	3268836.0	3268836.0	
25	TRC-83014	0.70 / 0.70	1580	897	1488123.0		
26	TRC-83018	2.32 / 2.57	1590	896	5491987.2	5491987.2	5491987.2
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			41311858.2	33867835.2	19576987.2

NOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 12000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61	/	0.82	950	1000	1168500.0		
3	DDH-83001	0.60	/	0.60	950	1000	855000.0		
4	DDH-83001	0.72	/	0.87	950	1000	1239750.0		
5	DDH-83001	5.41	/	5.96	980	1000	8761200.0	8761200.0	8761200.0
7	DDH-83003	0.78	/	0.78	930	1000	1088100.0		
9	DDH-83003	1.98	/	1.98	920	1000	2732400.0	2732400.0	
10	DDH-83003	1.07	/	1.07	900	1000	1444500.0	1444500.0	
13	TRC-82001	1.15	/	1.15	900	1000	1552500.0	1552500.0	
14	TRC-81005	1.25	/	1.75	1030	1000	2703750.0	2703750.0	
15	TRC-83050	0.58	/	0.87	1080	1000	1409400.0		
16	TRC-83050	0.89	/	0.89	1080	1000	1441800.0		
17	TRC-83056	1.03	/	1.03	1200	1000	1854000.0	1854000.0	
19	TRC-83022	4.12	/	4.39	1320	1000	8692200.0	8692200.0	8692200.0
21	DDH-83002	0.91	/	1.63	1600	1000	3912000.0	3912000.0	
24	TRC-83019	1.71	/	1.71	1600	1000	4104000.0	4104000.0	
25	TRC-83014	0.70	/	0.70	1550	1000	1627500.0		
26	TRC-83018	2.32	/	2.57	1550	1000	5975250.0	5975250.0	5975250.0
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			50561850.0	41731800.0	23428650.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 13000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	1000	1000	1230000.0		
3	DDH-83001	0.60 / 0.60	1000	1000	900000.0		
4	DDH-83001	0.72 / 0.87	1000	1000	1305000.0		
5	DDH-83001	5.41 / 5.96	1000	1000	8940000.0	8940000.0	8940000.0
7	DDH-83003	0.78 / 0.78	1000	1000	1170000.0		
9	DDH-83003	1.98 / 1.98	1000	1000	2970000.0	2970000.0	
10	DDH-83003	1.07 / 1.07	920	1000	1476600.0	1476600.0	
13	TRC-82001	1.15 / 1.15	900	1000	1552500.0	1552500.0	
14	TRC-81005	1.25 / 1.75	900	1000	2362500.0	2362500.0	
15	TRC-83050	0.58 / 0.87	1020	1000	1331100.0		
16	TRC-83050	0.89 / 0.89	1020	1000	1361700.0		
17	TRC-83056	1.03 / 1.03	1170	1000	1807650.0	1807650.0	
19	TRC-83022	4.12 / 4.39	1320	1000	8692200.0	8692200.0	8692200.0
21	DDH-83002	0.91 / 1.63	1640	980	3929604.0	3929604.0	
24	TRC-83019	1.71 / 1.71	1800	960	4432320.0	4432320.0	
25	TRC-83014	0.70 / 0.70	2080	946	2066064.0		
26	TRC-83018	2.32 / 2.57	2080	946	7585406.4	7585406.4	7585406.4
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			53112644.4	43748780.4	25217606.4

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 14000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61	/	0.82	800	1000	984000.0		
3	DDH-83001	0.60	/	0.60	800	1000	720000.0		
4	DDH-83001	0.72	/	0.87	800	1000	1044000.0		
5	DDH-83001	5.41	/	5.96	820	1000	7330800.0	7330800.0	7330800.0
7	DDH-83003	0.78	/	0.78	820	1000	959400.0		
9	DDH-83003	1.98	/	1.98	820	1000	2435400.0	2435400.0	
10	DDH-83003	1.07	/	1.07	850	1000	1364250.0	1364250.0	
13	TRC-82001	1.15	/	1.15	1150	1000	1983750.0	1983750.0	
14	TRC-81005	1.25	/	1.75	1160	1000	3045000.0	3045000.0	
15	TRC-83050	0.58	/	0.87	1170	1000	1526850.0		
16	TRC-83050	0.89	/	0.89	1170	1000	1561950.0		
17	TRC-83056	1.03	/	1.03	1300	1000	2008500.0	2008500.0	
19	TRC-83022	4.12	/	4.39	1450	1000	9548250.0	9548250.0	9548250.0
21	DDH-83002	0.91	/	1.63	1580	1000	3863100.0	3863100.0	
24	TRC-83019	1.71	/	1.71	1720	1000	4411800.0	4411800.0	
25	TRC-83014	0.70	/	0.70	1780	1000	1869000.0		
26	TRC-83018	2.32	/	2.57	1780	1000	6861900.0	6861900.0	6861900.0
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			51517950.0	42852750.0	23740950.0

NOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 15000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	775	1000	953250.0		
3	DDH-83001	0.60 / 0.60	775	1000	697500.0		
4	DDH-83001	0.72 / 0.87	775	1000	1011375.0		
5	DDH-83001	5.41 / 5.96	800	1000	7152000.0	7152000.0	7152000.0
7	DDH-83003	0.78 / 0.78	870	1000	1017900.0		
9	DDH-83003	1.98 / 1.98	880	1000	2613600.0	2613600.0	
10	DDH-83003	1.07 / 1.07	950	1000	1524750.0	1524750.0	
13	TRC-82001	1.15 / 1.15	1180	1000	2035500.0	2035500.0	
14	TRC-81005	1.25 / 1.75	1200	1000	3150000.0	3150000.0	
15	TRC-83050	0.58 / 0.87	1210	1000	1579050.0		
16	TRC-83050	0.89 / 0.89	1210	1000	1615350.0		
17	TRC-83056	1.03 / 1.03	1380	1000	2132100.0	2132100.0	
19	TRC-83022	4.12 / 4.39	1520	1000	10009200.0	10009200.0	10009200.0
21	DDH-83002	0.91 / 1.63	1680	1000	4107600.0	4107600.0	
24	TRC-83019	1.71 / 1.71	1690	1000	4334850.0	4334850.0	
25	TRC-83014	0.70 / 0.70	1720	1000	1806000.0		
26	TRC-83001	0.90 / 1.51	1720	1000	3895800.0	3895800.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			49635825.0	40955400.0	17161200.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 16000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	680	1000	836400.0		
3	DDH-83001	0.60 / 0.60	680	1000	612000.0		
4	DDH-83001	0.72 / 0.87	680	1000	887400.0		
5	DDH-83001	5.41 / 5.96	720	1000	6436800.0	6436800.0	6436800.0
7	DDH-83003	0.78 / 0.78	780	1000	912600.0		
9	DDH-83003	1.98 / 1.98	790	1000	2346300.0	2346300.0	
10	DDH-83003	1.07 / 1.07	820	1000	1316100.0	1316100.0	
13	TRC-82001	1.15 / 1.15	850	1000	1466250.0	1466250.0	
14	TRC-81005	1.25 / 1.75	1380	1000	3622500.0	3622500.0	
15	TRC-83050	0.58 / 0.87	1350	1000	1761750.0		
16	TRC-83050	0.89 / 0.89	1350	1000	1802250.0		
17	TRC-83056	1.03 / 1.03	1380	1000	2132100.0	2132100.0	
19	TRC-83022	4.12 / 4.39	1340	1000	8823900.0	8823900.0	8823900.0
21	DDH-83002	0.91 / 1.63	1350	1000	3300750.0	3300750.0	
24	TRC-83019	1.71 / 1.71	1350	1000	3462750.0	3462750.0	
25	TRC-83014	0.70 / 0.70	1450	1000	1522500.0		
26	TRC-83001	0.90 / 1.51	1450	1000	3284250.0	3284250.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			44526600.0	36191700.0	15260700.0

MORERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 17000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	630	1000	774900.0		
3	DDH-83001	0.60 / 0.60	630	1000	567000.0		
4	DDH-83001	0.72 / 0.87	630	1000	822150.0		
5	DDH-83001	5.41 / 5.96	700	1000	6258000.0	6258000.0	6258000.0
7	DDH-83003	0.78 / 0.78	735	1000	859950.0		
9	DDH-83003	1.98 / 1.98	750	1000	2227500.0	2227500.0	
10	DDH-83003	1.07 / 1.07	750	1000	1203750.0	1203750.0	
13	TRC-82001	1.15 / 1.15	1100	1000	1897500.0	1897500.0	
14	TRC-81005	1.25 / 1.75	1100	1000	2887500.0	2887500.0	
15	TRC-83050	0.58 / 0.87	1100	1000	1435500.0		
16	TRC-83050	0.89 / 0.89	1100	1000	1468500.0		
17	TRC-83056	1.03 / 1.03	1360	1000	2101200.0	2101200.0	
19	TRC-83022	4.12 / 4.39	1380	1000	9087300.0	9087300.0	9087300.0
21	DDH-83002	0.91 / 1.63	1400	1000	3423000.0	3423000.0	
24	TRC-83019	1.71 / 1.71	1480	1000	3796200.0	3796200.0	
25	TRC-83014	0.70 / 0.70	1600	1000	1680000.0		
26	TRC-83001	0.90 / 1.51	1600	1000	3624000.0	3624000.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			44113950.0	36505950.0	15345300.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 18000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	600	1000	738000.0		
3	DDH-83001	0.60 / 0.60	600	1000	540000.0		
4	DDH-83001	0.72 / 0.87	600	1000	783000.0		
5	DDH-83001	5.41 / 5.96	680	1000	6079200.0	6079200.0	6079200.0
7	DDH-83003	0.78 / 0.78	760	1000	889200.0		
9	DDH-83003	1.98 / 1.98	800	1000	2376000.0	2376000.0	
10	DDH-83003	1.07 / 1.07	900	1000	1444500.0	1444500.0	
13	TRC-82001	1.15 / 1.15	1010	1000	1742250.0	1742250.0	
14	TRC-81005	1.25 / 1.75	1020	1000	2677500.0	2677500.0	
15	TRC-83050	0.58 / 0.87	1030	1000	1344150.0		
16	TRC-83050	0.89 / 0.89	1030	1000	1375050.0		
17	TRC-83056	1.03 / 1.03	900	1000	1390500.0	1390500.0	
19	TRC-83022	4.12 / 4.39	900	1000	5926500.0	5926500.0	5926500.0
21	DDH-83002	0.91 / 1.63	800	1000	1956000.0	1956000.0	
24	TRC-83019	1.71 / 1.71	750	1000	1923750.0	1923750.0	
25	TRC-83014	0.70 / 0.70	700	1000	735000.0		
26	TRC-83001	0.90 / 1.51	700	1000	1585500.0	1585500.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			33506100.0	27101700.0	12005700.0

NORERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 19000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	550	825	558112.5		
3	DDH-83001	0.60 / 0.60	550	825	408375.0		
4	DDH-83001	0.72 / 0.87	550	825	592143.8		
5	DDH-83001	5.41 / 5.96	630	825	4646565.0	4646565.0	4646565.0
7	DDH-83003	0.78 / 0.78	700	825	675675.0		
9	DDH-83003	1.98 / 1.98	720	825	1764180.0	1764180.0	
10	DDH-83003	1.07 / 1.07	780	825	1032817.5	1032817.5	
13	TRC-82001	1.15 / 1.15	780	825	1110037.5	1110037.5	
14	TRC-81005	1.25 / 1.75	780	825	1689187.5	1689187.5	
15	TRC-83050	0.58 / 0.87	780	825	839767.5		
16	TRC-83050	0.89 / 0.89	780	825	859072.5		
17	TRC-83056	1.03 / 1.03	700	825	892237.5	892237.5	
19	TRC-83022	4.12 / 4.39	650	825	3531206.3	3531206.3	3531206.3
21	DDH-83002	0.91 / 1.63	600	825	1210275.0	1210275.0	
24	TRC-83019	1.71 / 1.71	650	825	1375481.3	1375481.3	
25	TRC-83014	0.70 / 0.70	620	825	537075.0		
26	TRC-83001	0.90 / 1.51	620	825	1158547.5	1158547.5	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			22880756.3	18410535.0	8177771.3

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: CRASSIER
SECTION: 20000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
2	DDH-83001	0.61 / 0.82	550	1340	906510.0		
3	DDH-83001	0.60 / 0.60	550	1340	663300.0		
4	DDH-83001	0.72 / 0.87	550	1340	961785.0		
5	DDH-83001	5.41 / 5.96	550	1340	6588780.0	6588780.0	6588780.0
7	DDH-83003	0.78 / 0.78	530	1340	830934.0		
9	DDH-83003	1.98 / 1.98	520	1340	2069496.0	2069496.0	
10	DDH-83003	1.07 / 1.07	520	1340	1118364.0	1118364.0	
13	TRC-82001	1.15 / 1.15	550	1340	1271325.0	1271325.0	
14	TRC-81005	1.25 / 1.75	550	1340	1934625.0	1934625.0	
15	TRC-83050	0.58 / 0.87	550	1340	961785.0		
16	TRC-83050	0.89 / 0.89	550	1340	983895.0		
17	TRC-83056	1.03 / 1.03	500	1340	1035150.0	1035150.0	
19	TRC-83022	4.12 / 4.39	450	1340	3970755.0	3970755.0	3970755.0
21	DDH-83002	0.91 / 1.63	400	1340	1310520.0	1310520.0	
24	TRC-83019	1.71 / 1.71	370	1340	1271727.0	1271727.0	
25	TRC-83014	0.70 / 0.70	320	1340	450240.0		
26	TRC-83001	0.90 / 1.51	320	1340	971232.0	971232.0	
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			27300423.0	21541974.0	10559535.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 2000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
10	TRC-83049	0.62 / 0.62	130	700	84630.0		
12	DDH-81012	0.56 / 0.65	230	700	156975.0		
13	TRC-83031	1.11 / 1.43	260	700	390390.0	390390.0	
14	TRC-83043	0.53 / 0.53	300	700	166950.0		
15	TRC-83050	0.58 / 0.87	330	700	301455.0		
16	TRC-83050	0.89 / 0.89	330	700	308385.0		
17	TRC-83056	1.03 / 1.03	400	700	432600.0	432600.0	
18	TRC-83021	0.94 / 0.94	460	700	454020.0		
19	TRC-83038	4.40 / 4.65	520	700	2538900.0	2538900.0	2538900.0
20	TRC-83045	0.68 / 0.79	570	700	472815.0		
21	TRC-83048	0.96 / 0.96	630	700	635040.0		
22	TRC-83047	1.07 / 1.07	630	700	707805.0	707805.0	
23	TRC-83046	0.56 / 0.56	630	700	370440.0		
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			7020405.0	4069695.0	2538900.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 4000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) /	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
14	DDH-81012	0.59 /	0.93	40	1000	55800.0		
17	DDH-81012	0.53 /	0.53	150	1000	119250.0		
18	TRC-83021	0.94	0.94	175	1000	246750.0		
19	TRC-83038	4.40 /	4.65	200	1000	1395000.0	1395000.0	1395000.0
20	TRC-83045	0.68 /	0.79	210	1000	248850.0		
21	TRC-83048	0.96 /	0.96	215	1000	309600.0		
22	TRC-83047	1.07 /	1.07	220	1000	353100.0	353100.0	
23	TRC-83046	0.56 /	0.56	250	1000	210000.0		
26	TRC-83034	1.80 /	1.85	350	1000	971250.0	971250.0	
						SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
			TOTAL TONNES THIS SECTION:			3909600.0	2719350.0	1395000.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 5000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
12	DDH-83012	0.56	/	0.65	240	1000	234000.0		
13	TRC-83031	1.11	/	1.43	300	1000	643500.0	643500.0	
14	DDH-81012	0.59	/	0.93	340	1000	474300.0		
17	DDH-81012	0.53	/	0.53	430	1000	341850.0		
19	TRC-83038	4.40	/	4.65	530	1000	3696750.0	3696750.0	3696750.0
20	TRC-83045	0.68	/	0.79	690	1000	817650.0		
21	TRC-83048	0.96	/	0.96	650	1000	936000.0		
22	TRC-83047	1.07	/	1.07	680	1000	1091400.0	1091400.0	
23	TRC-83046	0.56	/	0.56	680	1000	571200.0		
26	TRC-83034	1.80	/	1.85	900	1000	2497500.0	2497500.0	
27	TRC-83053	0.69	/	0.73	1100	1000	1204500.0		
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			12508650.0	7929150.0	3696750.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 7000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
4	TRC-83028	2.21 / 2.58	30	1000	116100.0	116100.0	116100.0
5	DDH-81012	2.71 / 3.22	390	1000	1883700.0	1883700.0	1883700.0
7	DDH-81012	1.04 / 1.04	600	1000	936000.0	936000.0	
8	DDH-81012	1.70 / 1.70	670	1000	1708500.0	1708500.0	
9	DDH-81012	1.47 / 2.12	680	1000	2162400.0	2162400.0	2162400.0
12	DDH-81012	0.56 / 0.65	890	1000	867750.0		
13	TRC-83031	1.11 / 1.43	930	1000	1994850.0	1994850.0	
14	DDH-81012	0.59 / 0.93	950	1000	1325250.0		
17	DDH-81012	0.53 / 0.53	1200	1000	954000.0		
19	TRC-83038	4.40 / 4.65	1350	1000	9416250.0	9416250.0	9416250.0
20	TRC-83045	0.68 / 0.79	1450	1000	1718250.0		
21	TRC-83048	0.96 / 0.96	1500	1000	2160000.0		
22	TRC-83047	1.07 / 1.07	1500	1000	2407500.0	2407500.0	
23	TRC-83046	0.56 / 0.56	1530	1000	1285200.0		
26	TRC-83034	1.80 / 1.85	1590	1000	4412250.0	4412250.0	
27	TRC-83053	0.69 / 0.73	1710	1000	1872450.0		
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			35220450.0	25037550.0	13578450.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 8000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
5	DDH-81012	2.71 / 3.22	40	1000	193200.0	193200.0	193200.0
7	DDH-81012	1.04 / 1.04	230	1000	358800.0	358800.0	
8	DDH-81012	1.70 / 1.70	510	1000	1300500.0	1300500.0	
9	DDH-81012	1.47 / 2.12	660	1000	2098800.0	2098800.0	2098800.0
12	DDH-81012	0.56 / 0.65	1580	1000	1540500.0		
13	DDH-81012	1.03 / 1.08	1720	1000	2786400.0	2786400.0	
14	DDH-81012	0.59 / 0.93	1900	1000	2650500.0		
17	DDH-81012	0.53 / 0.53	2460	1000	1955700.0		
19	TRC-83038	4.40 / 4.65	2800	1000	19530000.0	19530000.0	19530000.0
20	TRC-83045	0.68 / 0.79	2950	1000	3495750.0		
21	TRC-83048	0.96 / 0.96	3120	1000	4492800.0		
22	TRC-83047	1.07 / 1.07	3120	1000	5007600.0	5007600.0	
23	TRC-83046	0.56 / 0.56	3120	1000	2620800.0		
26	TRC-83034	1.80 / 1.85	3520	1000	9768000.0	9768000.0	
27	TRC-83053	0.69 / 0.73	3360	1000	3679200.0		
					SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
		TOTAL TONNES THIS SECTION:			61478550.0	41043300.0	21822000.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 9000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
12	DDH-81012	0.56	/	0.65	500	1108	540150.0		
13	DDH-81012	1.03	/	1.08	800	1105	1432080.0	1432080.0	
14	DDH-81012	0.59	/	0.93	830	1108	1282897.8		
17	DDH-81012	0.53	/	0.53	1500	1080	1287900.0		
19	TRC-83038	4.40	/	4.65	1900	1076	14259690.0	14259690.0	14259690.0
20	TRC-83045	0.68	/	0.79	2220	1066	2804326.2		
21	TRC-83048	0.96	/	0.96	2240	1067	3441715.2		
22	TRC-83047	1.07	/	1.07	2240	1071	3850459.2	3850459.2	
23	TRC-83046	0.56	/	0.56	2240	1071	2015193.6		
26	TRC-83034	1.80	/	1.85	2970	1056	8703288.0	8703288.0	
27	TRC-83053	0.69	/	0.73	3340	1056	3862108.8		
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
					TOTAL TONNES THIS SECTION:		43479808.8	28245517.2	14259690.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 10000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
19	TRC-83038	4.40	/	4.65	220	850	1304325.0	1304325.0	1304325.0
20	TRC-83045	0.68	/	0.79	240	850	241740.0		
21	TRC-83048	0.96	/	0.96	260	850	318240.0		
22	TRC-83047	1.07	/	1.07	400	850	545700.0	545700.0	
23	TRC-83046	0.56	/	0.56	400	850	285600.0		
26	TRC-83034	1.80	/	1.85	700	850	1651125.0	1651125.0	
27	TRC-83053	0.69	/	0.73	1320	850	1228590.0		
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			5575320.0	3501150.0	1304325.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 12000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
26	TRC-83034	1.80	/	1.85	160	550	244200.0	244200.0	
27	TRC-83053	0.69	/	0.73	500	550	301125.0		
							SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:			545325.0	244200.0	0.0

MOBERLY PROSPECT - RESOURCE CALCULATIONS November 1983

REGION: FISHER
SECTION: 13000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-MB-)	COAL (m) /	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
21	TRC-83048	0.96 /	0.96	30	1000	43200.0		
22	TRC-83047	1.07 /	1.07	150	1000	240750.0	240750.0	
23	TRC-83046	0.56 /	0.56	150	1000	126000.0		
26	TRC-83034	1.80 /	1.85	300	1000	832500.0	832500.0	
27	TRC-83053	0.69 /	0.73	520	1000	569400.0		
						SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
			TOTAL TONNES THIS SECTION:			1811850.0	1073250.0	0.0

TABLE AREA RESOURCE SUMMARY November 1983

SECTION	FORMATION (tonnes) BRENOT	DRESSER	GETHING	SECTION TOTAL
5000N	2191200	1637520		3828720
4000N	6866250	6432150	10031400	23329800
3000N	10768500	7130550	7422240	25321290
2000N	23455500	24491025		47946525
1000N	23621250	14851500		38472750
0000	15489450	8859000		24348450
1000S	6589950	5695500		12285450
2000S(E)	3915000	3342000		7257000
2000S(W)	318750			318750
3000S(E)	10087500	6072000		16159500
3000S(W)	698850			698850
4000S(E)	11701500	8125500		19827000
4000S(W)	2693250			2693250
5000S(E)	11701500	8242050		19943550
6000S(E)	10811700	5099250		15910950
7000S(E)	11418810	4352400		15771210
TOTAL	152328960	104330445	17453640	274113045

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 7000S(E)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m) /	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83006	Kdr	1.01 /	1.01	200	1300	393900.0	393900.0	
7	TRC-82049	Kdr	1.25 /	1.45	1400	1300	3958500.0	3958500.0	
8	TRC-83005	JKb	1.42 /	1.84	2120	1300	7606560.0	7606560.0	
9	TRC-83008	JKb	0.85 /	0.85	2300	1300	3812250.0		
							SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
				TOTAL TONNES THIS SECTION:			15771210.0	11958960.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 6000S(E)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m) /	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83006	Kdr	1.01 /	1.01	150	1000	227250.0	227250.0	
7	TRC-82049	Kdr	1.25 /	1.45	2240	1000	4872000.0	4872000.0	
8	TRC-83005	JKb	1.42 /	1.84	2670	1000	7369200.0	7369200.0	
9	TRC-83008	JKb	0.85 /	0.85	2700	1000	3442500.0		
							SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
				TOTAL TONNES THIS SECTION:			15910950.0	12468450.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 5000S(E)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83006	Kdr	1.01	/	1.01	1320	1000	1999800.0	1999800.0	
7	TRC-82049	Kdr	1.25	/	1.45	2870	1000	6242250.0	6242250.0	
8	TRC-83005	JKb	1.42	/	1.84	2900	1000	8004000.0	8004000.0	
9	TRC-83008	JKb	0.85	/	0.85	2900	1000	3697500.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			19943550.0	16246050.0	0.0

GODDRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 4000S(W)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
8	TRC-83005	JKb	1.42	/	1.84	500	1000	1380000.0	1380000.0	
9	TRC-83008	JKb	0.85	/	0.85	1030	1000	1313250.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			2693250.0	1380000.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 4000S(E)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83006	Kdr	1.01	/	1.01	1200	1000	1818000.0	1818000.0	
7	TRC-82049	Kdr	1.25	/	1.45	2900	1000	6307500.0	6307500.0	
8	TRC-83005	JKb	1.42	/	1.84	2900	1000	8004000.0	8004000.0	
9	TRC-83008	JKb	0.85	/	0.85	2900	1000	3697500.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			19827000.0	16129500.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 3000S(W)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
8	TRC-83005	JKb	1.42	/	1.84	110	1000	303600.0	303600.0	
9	TRC-83008	JKb	0.85	/	0.85	310	1000	395250.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			698850.0	303600.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 3000S(E)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83006	Kdr	1.01 / 1.01	950	1000	1439250.0	1439250.0	
7	TRC-82049	Kdr	1.25 / 1.45	2130	1000	4632750.0	4632750.0	
8	TRC-83005	JKb	1.42 / 1.84	2500	1000	6900000.0	6900000.0	
9	TRC-83008	JKb	0.85 / 0.85	2500	1000	3187500.0		
						SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
				TOTAL TONNES THIS SECTION:		16159500.0	12972000.0	0.0

GOUDRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS *November 1983*

SECTION: 2000S(W)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
9	TRC-83008	JKb	0.85	/	0.85	250	1000	318750.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			318750.0	0.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 2000S(E)

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83002	Kdr	0.66	/	0.66	300	1000	297000.0		
7	TRC-82049	Kdr	1.25	/	1.45	1400	1000	3045000.0	3045000.0	
8	TRC-81006	JKb	0.62	/	0.89	1500	1000	2002500.0		
9	TRC-83008	JKb	0.85	/	0.85	1500	1000	1912500.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			7257000.0	3045000.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 1000S

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83002	Kdr	0.66	/	0.66	700	1000	693000.0		
7	TRC-82049	Kdr	1.25	/	1.45	2300	1000	5002500.0	5002500.0	
8	TRC-81001	Jkb	0.62	/	0.89	2520	1000	3364200.0		
9	TRC-83008	Jkb	0.85	/	0.85	2530	1000	3225750.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			12285450.0	5002500.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 0000

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83002	Kdr	0.66	/	0.66	600	1000	594000.0		
7	TRC-82049	Kdr	1.25	/	1.45	3800	1000	8265000.0	8265000.0	
8	TRC-81001	JKb	0.62	/	0.89	5920	1000	7903200.0		
9	TRC-83008	JKb	0.85	/	0.85	5950	1000	7586250.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			24348450.0	8265000.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 1000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83002	Kdr	0.66	/	0.66	1600	1000	1584000.0		
7	TRC-82049	Kdr	1.25	/	1.45	6100	1000	13267500.0	13267500.0	
8	TRC-81006	JKb	1.07	/	1.35	7100	1000	14377500.0	14377500.0	
9	TRC-83008	JKb	0.85	/	0.85	7250	1000	9243750.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			38472750.0	27645000.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 2000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83002	Kdr	0.66	/	0.66	4200	1300	5405400.0		
7	TRC-82049	Kdr	1.25	/	1.45	6750	1300	19085625.0	19085625.0	
8	TRC-81006	JKb	1.07	/	1.35	7100	1000	14377500.0	14377500.0	
9	TRC-83008	JKb	0.85	/	0.85	7120	1000	9078000.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
					TOTAL TONNES THIS SECTION:			47946525.0	33463125.0	0.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 3000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m)	/	COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
4	TRC-83001	Kgt	2.68	/	2.96	730	700	2268840.0	2268840.0	2268840.0
5	TRC-83007	Kgt	3.63	/	4.09	1200	700	5153400.0	5153400.0	5153400.0
6	TRC-83002	Kdr	0.66	/	0.66	2600	700	1801800.0		
7	TRC-82049	Kdr	1.25	/	1.45	3500	700	5328750.0	5328750.0	
8	TRC-81006	JKb	1.07	/	1.35	3240	1000	6561000.0	6561000.0	
9	TRC-83008	JKb	0.85	/	0.85	3300	1000	4207500.0		
								SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
						TOTAL TONNES THIS SECTION:		25321290.0	19311990.0	7422240.0

GOODRICH SOUTH TABLE AREA -- RESOURCE CALCULATIONS November 1983

SECTION: 4000N

SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
4	TRC-83001	Kgt	2.68 / 2.97	600	1000	2669400.0	2669400.0	2669400.0
5	TRC-83007	Kgt	3.63 / 4.09	1200	1000	7362000.0	7362000.0	7362000.0
6	TRC-83002	Kdr	0.66 / 0.66	1510	1000	1494900.0		
7	TRC-82049	Kdr	1.25 / 1.45	2270	1000	4937250.0	4937250.0	
8	TRC-81006	JKb	1.07 / 1.35	2100	1000	4252500.0	4252500.0	
9	TRC-83008	JKb	0.85 / 0.85	2050	1000	2613750.0		
						SEAMS >0.5M:	SEAMS >1.0M:	SEAMS >2.0M:
				TOTAL TONNES THIS SECTION:		23329800.0	19221150.0	10031400.0

GOODRICH SOUTH TABLE AREA - RESOURCE CALCULATIONS November 1983

SECTION: 5000N

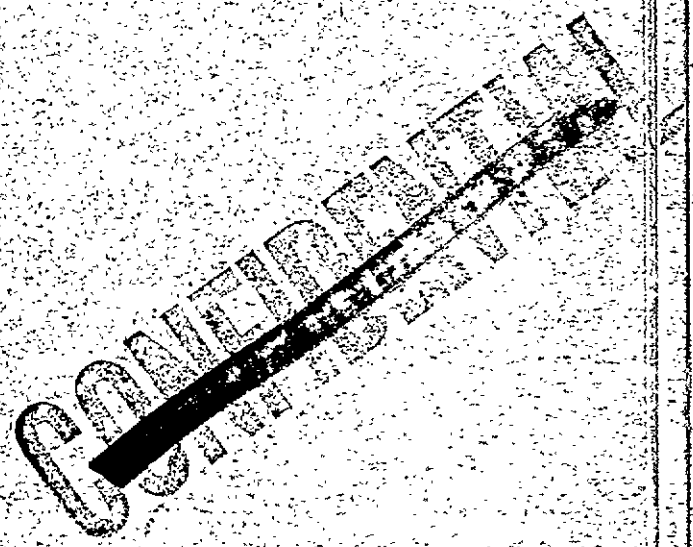
SPECIFIC GRAVITY: 1.50 tonnes/m3

SEAM NUMBER	DATA SOURCE (GDR-GS-)	FM	COAL (m) / COAL+ROCK (m)	SEAM LENGTH (m)	INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	TOTAL TONNES SEAMS >=1.0m	TOTAL TONNES SEAMS >=2.0m
6	TRC-83002	Kdr	0.66 / 0.66	310	800	245520.0		
7	TRC-82049	Kdr	1.25 / 1.45	800	800	1392000.0	1392000.0	
8	TRC-81006	JKb	1.07 / 1.35	830	800	1344600.0	1344600.0	
9	TRC-83008	JKb	0.85 / 0.85	830	800	846600.0		
						SEAMS >=0.5M:	SEAMS >=1.0M:	SEAMS >=2.0M:
				TOTAL TONNES THIS SECTION:		3828720.0	2736600.0	0.0

PR - GOODRICH 83A

CONFIDENTIAL

COAL ANALYSES



534

CONFIDENTIAL

Appendix 1 - 4

Float Sink Data

A. Specific Gravity 1.50% Recoveries

B. Specific Gravity 1.50 F/S Analyses

12/13/83 11:14:46 BEGIN SYSTEM 2000 - RELEASE 10.1

USER,X:ECHO OFF:

***** GEX - 03.01 - COCC.COAL/01 ALLOCATED.

-556- OPENED.....COAL 56 29282 13/12/83 10:08:43

1 GOODRICH GETHING COAL SEAMS- SPECIFIC GRAVITY FLOAT(1.50) SINK(2.60) RECOVERIES

13/12/83

* DATA SOURCE ***	SAMPLE ID	SAMPLE TYPE	DEPTH FROM	DEPTH TO	FRACTION SIZE FROM	FRACTION SIZE TO	SPECIFIC GRAVITY CUTPOINT	YIELD PER FRACTION
* DDH83001	2152	SIMP	23.15	23.78	9.50	.00	1.50	66.68
*					9.50	.00	2.60	33.32
*	2153	SIMP	29.79	30.67	9.50	.00	1.50	87.88
*					9.50	.00	2.60	12.12
*	2154	SIMP	70.00	70.04	9.50	.00	1.50	.58
*					9.50	.00	2.60	99.42
*	2155	SIMP	70.04	70.28	9.50	.00	1.50	84.06
*					9 50	.00	2.60	15.94
*	2156	SIMP	70.28	70.78	9.50	.00	1.50	4.01
*					9.50	.00	2.60	95.99
*	2157	SIMP	70.78	72.02	9.50	.00	1.50	88.67
*					9.50	.00	2.60	11.33
*	2158	SIMP	72.02	72.07	9.50	.00	1.50	3.93
*					9.50	.00	2.60	96.07
*	2159	SIMP	72.07	76.20	9.50	.00	1.50	95.41
*					9.50	.00	2.60	4.59
*	2181	SIMP	15.81	16.66	9.50	.00	1.50	46.70
*					9.50	.00	2.60	53.30
* DDH83002	2162	SIMP	10.62	10.82	9.50	.00	1.50	90.75
*					9.50	.00	2.60	9.25
*	2163	SIMP	10.82	11.54	9.50	.00	1.50	10.36
*					9.50	.00	2.60	89.64
*	2164	SIMP	11.54	13.67	9.50	.00	1.50	86.59
*					9.50	.00	2.60	13.41
*	2167	SIMP	22.51	22.76	9.50	.00	1.50	2.21
*					9.50	.00	2.60	97.79
*	2168	SIMP	22.76	24.63	9.50	.00	1.50	97.69
*					9.50	.00	2.60	2.31
*	2169	SIMP	24.63	24.93	9.50	.00	1.50	13.26
*					9.50	.00	2.60	86.74
*	2170	SIMP	24.93	25.91	9.50	.00	1.50	94.12
*					9.50	.00	2.60	5.88
*	2171	SIMP	25.91	26.17	9.50	.00	1.50	4.85
*					9.50	.00	2.60	95.15
*	2172	SIMP	26.17	26.77	9.50	.00	1.50	92.28
*					9.50	.00	2.60	7.72
*	2173	SIMP	26.77	27.80	9.50	.00	1.50	4.65
*					9.50	.00	2.60	95.35
*	2174	SIMP	27.80	28.14	9.50	.00	1.50	94.50
*					9.50	.00	2.60	5.50
*	2177	SIMP	47.26	48.21	9.50	.00	1.50	71.34
*					9.50	.00	2.60	28.66
*	2178	SIMP	48.21	48.69	9.50	.00	1.50	1.62
*					9.50	.00	2.60	98.38
*	2179	SIMP	48.69	49.08	9.50	.00	1.50	81.84
*					9.50	.00	2.60	18.16
*	2185	SIMP	30.76	31.45	9.50	.00	1.50	31.98
*					9.50	.00	2.60	68.02

*		2186	SIMP	61.28	61.79	9.50	.00	1.50	85.00
*						9.50	.00	2.60	15.00
*		2187	SIMP	61.79	64.03	9.50	.00	1.50	6.62
*						9.50	.00	2.60	93.38
*	DDH83003	2182	SIMP	38.75	43.60	9.50	.00	1.50	89.27
*						9.50	.00	2.60	10.73
*		2183	SIMP	103.70	103.84	9.50	.00	1.50	2.22
*						9.50	.00	2.60	96.78
*		2184	SIMP	103.84	105.56	9.50	.00	1.50	69.17
*						9.50	.00	2.60	30.83

11:14:56 12/13/83 END SYSTEM 2000 - RELEASE 10.1

12/04, 3 13:59:14 BEGIN SYSTEM 2000 - RELEASE 10.1

USER,X:ECHO OFF:

***** GEX - 03.01 - COCC.COAL/01 ALLOCATED.

-556- OPENED.....COAL 56 26727 02/12/83 11:23:34

1 GOODRICH MOBERLY AREA - GETHING COAL --SP.G.1.50 FLOAT(CC1)-SINK(CC2) ANALYSES

04/12/83

* DRILL HOLE ***	SEAM	SAMPLE ID	SPLIT SAMPLE ID	PRODUCT SAMPLE ID	RESIDUAL MOISTURE %	ASH %	FIXED CARBON %	VOLATILE MATTER %	TOTAL SULPHUR %	CALORIFIC VALUE MJ-KG	FSI
* DDH83001	3	2152	SP1	CC1	1.12	4.48	68.12	26.28	1.01	33.72	4.5
*				CC2	1.58	51.82				10.07	
*	4	2153	SP1	CC1	1.07	5.25	70.68	23.00	.84	33.70	6.5
*				CC2	1.39	44.52				18.29	
*		2154	SP1	CC1	.96	17.36					
*				CC2	.55	86.15				.32	
*	5	2155	SP1	CC1	.90	5.51	74.67	18.92	.50	33.80	1.5
*				CC2	1.12	55.74				13.73	
*	5	2156	SP1	CC1	.89	23.65	58.37	17.09	.40	27.00	1:5
*				CC2	1.46	71.06				8.55	
*	5	2157	SP1	CC1	.74	4.54	71.46	23.26	.41	34.43	8.5
*				CC2	.84	44.62				19.40	
*	5	2158	SP1	CC1	.81	26.27	51.94	20.98	.26	25.50	8.0
*				CC2	.67	82.43				1.58	
*	5	2159	SP1	CC1	1.51	2.62	75.56	20.31	.38	34.49	.5
*				CC2	1.02	50.95				14.21	
*	2	2181	SP1	CC1	1.68	5.82	69.96	22.54	.98	32.77	1.0
*				CC2	1.33	61.02				12.08	

13:59:17 12/04/83 END SYSTEM 2000 - RELEASE 10.1

12/04/83 13:57:59 BEGIN SYSTEM 2000 - RELEASE 10.1

USER,X:ECHO OFF:

***** GEX - 03.01 - COCC.COAL/01 ALLOCATED.

-556- OPENED.....COAL 56 26727 02/12/83 11:23:34

1 GOODRICH MOBERLY AREA - GETHING COAL --SP.G.1.50 FLOAT(CC1)-SINK(CC2) ANALYSES

04/12/83

* DRILL HOLE ***	SEAM	SAMPLE ID	SPLIT SAMPLE ID	PRODUCT SAMPLE ID	RESIDUAL MOISTURE %	ASH %	FIXED CARBON %	VOLATILE MATTER %	TOTAL SULPHUR %	CALORIFIC VALUE MJ-KG	FSI
* DDH83002	18	2162	SP1	CC1	.65	9.01	73.96	16.38	.63	32.63	.5
*				CC2	.63	36.21				22.30	
*	18	2163	SP1	CC1	.82	10.71	66.21	22.26	.86	32.23	5.5
*				CC2	1.33	78.16				5.72	
*	18	2164	SP1	CC1	.82	2.28	79.18	17.72	.67	35.09	1.0
*				CC2	1.12	61.95				13.23	
*		2167	SP1	CC1	.87	26.48	56.55	16.10	.55	26.17	3.0
*				CC2	.43	94.61				1.13	
*	19	2168	SP1	CC1	.87	1.85	80.25	17.03	.60	35.11	.5
*				CC2	1.15	34.76				22.37	
*	19	2169	SP1	CC1	.96	7.44	74.02	17.58	.65	33.34	3.0
*				CC2	1.45	76.19				6.31	
*	19	2170	SP1	CC1	.79	4.31	79.45	15.45	.53	34.23	.5
*				CC2	1.19	52.62				15.52	
*	19	2171	SP1	CC1	1.00	23.85	58.31	16.84	1.72	26.79	1.0
*				CC2	1.44	81.96				4.05	
*	19	2172	SP1	CC1	.94	3.17	78.85	17.04	.73	34.50	.5
*				CC2	.89	56.25				12.12	
*	19	2173	SP1	CC1	1.06	13.23	66.97	18.74	1.21	30.76	4.0
*				CC2	.97	80.11				4.24	
*	19	2174	SP1	CC1	1.54	3.84	76.44	18.18	1.05	33.60	.5
*				CC2	1.24	57.03				13.46	
*	21	2177	SP1	CC1	.77	6.05	75.68	17.50	.89	33.88	3.5
*				CC2	.81	55.24				13.76	
*	21	2178	SP1	CC1	.85	19.19	63.60	16.36	1.02	28.96	6.0
*				CC2	1.64	85.60				2.58	
*	21	2179	SP1	CC1	.73	8.09	73.60	17.58	1.14	33.08	5.0
*				CC2	.97	41.44				13.82	
*	20	2185	SP1	CC1	1.49	10.06	69.55	18.90	1.28	31.32	.5
*				CC2	1.79	66.25				9.67	
*	23	2186	SP1	CC1	.88	5.66	75.68	17.78	1.48	33.85	3.5
*				CC2	.81	53.08				15.35	
*	24	2187	SP1	CC1	.87	16.77	62.46	19.90	2.76	29.84	8.5
*				CC2	.84	76.90				6.19	

13:58:00 12/04/83 END SYSTEM 2000 - RELEASE 10.1

FORM 0001

12/0[illegible]3 13:57:18 BEGIN SYSTEM 2000 - RELEASE 10.1

USER,X:ECHO OFF:
***** GEX - 03.01 - COCC.COAL/01 ALLOCATED.
-556- OPENED.....COAL 56 26727 02/12/83 11:23:34
1 GOODRICH MOBERLY AREA - GETHING COAL --SP.G.1.50 FLOAT(CC1)-SINK(CC2) ANALYSES
04/12/83

* DRILL HOLE ***	SEAM	SAMPLE ID	SPLIT SAMPLE ID	PRODUCT SAMPLE ID	RESIDUAL MOISTURE %	ASH %	FIXED CARBON %	VOLATILE MATTER %	TOTAL SULPHUR %	CALORIFIC VALUE MJ-KG	FSI
* DDH83003	9	2182	SP1	CC1	1.05	4.06	73.71	21.18	.49	34.27	2.5
*				CC2	.85	34.14				19.16	
*		2183	SP1	CC1	.76	16.51	61.42	21.31	.69	29.53	8.0
*				CC2	.66	78.37				2.78	
*	8	2184	SP1	CC1	.77	3.17	73.76	22.30	.65	34.95	7.5
*				CC2	.78	55.20				15.13	

13:57:22 12/04/83 END SYSTEM 2000 - RELEASE 10.1

FORM 0001

Appendix 1 - 7

Size Analysis of Composites

12/15/[illegible] 14:55:51 BEGIN SYSTEM 2000 - RELEASE 10.1

USER,X;ECHO OFF;

***** GEX - 03.01 - COCC.COAL/01 ALLOCATED.
-556- OPENED.....COAL 56 29479 15/12/83 10:54:02

1 . SIZE ANALYSIS-GOODRICH GETHING COAL SEAMS- MOBERLY AREA
15/12/83

* DATA SOURCE	SAMPLE ID	SAMPLE TYPE	SIZE ID	DEPTH FROM	DEPTH TO	FRACTION SIZE FROM	FRACTION SIZE TO	REL WT %	ASH %
***									
* DDH83001	1	COMP	SZ1	70.04	76.20	9.50	.60	61.06	20.81
*						.60	.15	24.88	8.25
*						.15	.00	14.06	7.53
*	2	COMP	SZ1	70.78	76.20	9.50	.60	57.57	7.12
*						.60	.15	26.83	5.64
*						.15	.00	15.60	9.82
*	9	COMP	SZ1	23.15	23.78	9.50	.60	57.03	23.56
*						.60	.15	26.68	15.98
*						.15	.00	16.29	16.74
*	10	COMP	SZ1	29.79	30.27	9.50	.60	67.39	11.18
*						.60	.15	23.22	8.21
*						.15	.00	9.39	7.96
* DDH83002	3	COMP	SZ1	10.62	13.67	9.50	.60	73.63	32.43
*						.60	.15	18.19	21.22
*						.15	.00	8.18	15.95
*	4	COMP	SZ1	22.76	26.77	9.50	.60	78.68	18.37
*						.60	.15	15.34	12.48
*						.15	.00	5.98	12.79
*	5	COMP	SZ1	26.77	28.14	9.50	.60	80.04	68.87
*						.60	.15	13.46	51.78
*						.15	.00	6.50	45.31
*	6	COMP	SZ1	47.26	26.77	9.50	.60	73.52	48.09
*						.60	.15	17.80	32.34
*						.15	.00	8.68	28.45
* DDH83003	7	COMP	SZ1	43.60	43.60	9.50	.60	64.88	7.78
*						.60	.15	23.66	4.84
*						.15	.00	11.46	6.28
*	8	COMP	SZ1	103.84	105.56	9.50	.60	70.18	21.48
*						.60	.15	19.46	18.04
*						.15	.00	10.36	13.01

14:55:56 12/15/83 END SYSTEM 2000 - RELEASE 10.1

Appendix 1 - 8

Washability Data

DDH 83001-Seam 5, Composite 1,	WA1, WA2
DDH 83001-Seam 5, Composite 2,	WA1, WA2
DDH 83001-Seam 3, Composite 9,	WA1, WA2
DDH 83001-Seam 4, Composite 10,	WA1, WA2

DDH 83002-Seam, 18 Composite 3	WA1, WA2
DDH 83002-Seam, 19 Composite 4	WA1, WA2
DDH 83002-Seam, 19 Composite 5	WA1, WA2
DDH 83002-Seam, 21 Composite 6	WA1, WA2

DDH 83003-Seam, 9 Composite 7	WA1 WA2
DDH 83003-Seam, 10 Composite 8	WA1 WA2

Blended Data Set for Seams 3, 4, 5, 9, 10, 18 and 19

****

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 5 SAMPLE ID - 1 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	RELATIVE WEIGHT % - CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	14.06 ASH % - CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	95.46	5.55	95.46	5.55	4.54	49.14								0.90	0.90
45.00	2.55	29.56	98.01	6.17	1.99	74.23								1.06	0.90
60.00	0.22	53.97	98.23	6.28	1.77	76.74								1.59	0.91
90.00	0.14	67.94	98.37	6.37	1.63	77.50								3.36	0.91
300.00	1.63	77.50	100.00	7.53										1.36	0.92

****

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 5 SAMPLE ID - 1 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 61.06 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	33.59	1.63	33.59	1.63	66.41	30.51		2.5							0.79	0.79
1.40	36.97	4.00	70.56	2.87	29.44	63.79		2.0							1.06	0.93
1.50	3.43	18.14	73.99	3.58	26.01	69.81		2.0							0.96	0.93
1.55	0.98	26.68	74.97	3.88	25.03	71.50		2.0							1.20	0.94
1.60	0.74	34.12	75.71	4.18	24.29	72.64		2.0							1.22	0.94
1.65	0.95	37.52	76.66	4.59	23.34	74.07		2.0							1.14	0.94
1.70	1.09	38.68	77.75	5.07	22.25	75.80		2.0							1.28	0.95
1.75	1.49	42.18	79.24	5.77	20.76	78.22		2.0							1.28	0.95
1.80	0.99	50.02	80.23	6.31	19.77	79.63		2.0							1.20	0.96
1.90	2.32	55.38	82.55	7.69	17.45	82.85		2.0							1.18	0.96
2.00	1.30	61.40	83.85	8.52	16.15	84.58		2.0							1.44	0.97
2.60	16.15	84.58	100.00	20.81				2.0							1.23	1.01

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 24.88 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	59.71	1.41	59.71	1.41	40.29	18.40		2.5							0.90	0.90
1.40	26.23	3.44	85.94	2.03	14.06	46.30		1.5							0.91	0.90
1.50	3.80	15.12	89.74	2.58	10.26	57.85		1.5							1.48	0.93
1.55	0.85	20.62	90.59	2.75	9.41	61.21		1.5							1.54	0.93
1.60	0.68	25.78	91.27	2.92	8.73	63.97		1.5							1.68	0.94
1.65	0.47	33.96	91.74	3.08	8.26	65.68		1.5							1.42	0.94
1.70	0.48	38.12	92.22	3.27	7.78	67.38		1.5							1.30	0.94
1.75	0.39	43.68	92.61	3.44	7.39	68.63		1.5							1.58	0.95
1.80	0.39	47.22	93.00	3.62	7.00	69.82		1.5							1.60	0.95
1.90	0.74	54.34	93.74	4.02	6.26	71.66		1.5							1.54	0.95
2.00	0.63	57.32	94.37	4.38	5.63	73.26		1.5							1.16	0.95
2.60	5.63	73.26	100.00	8.25				1.5							1.09	0.96

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 5 SAMPLE ID - 1 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 61.06 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	CUM. MOIST	CUM. MOIST
1.90	82.55	7.69	82.55	7.69	17.45	82.85	2.0							1.18	1.18
2.00	1.30	61.46	83.85	8.52	16.15	84.58	2.0							1.44	1.18
2.10	1.04	64.46	84.89	9.21	15.11	85.96	2.0							1.28	1.19
2.20	0.55	72.22	85.44	9.61	14.56	86.48	2.0							1.26	1.19
2.60	14.56	86.48	100.00	20.81			2.0							1.22	1.19

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 24.88 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	CUM. MOIST	CUM. MOIST
1.90	93.74	4.02	93.74	4.02	6.26	71.66	1.5							1.54	1.54
2.00	0.63	57.32	94.37	4.38	5.63	73.26	1.5							1.16	1.54
2.10	0.47	64.10	94.84	4.67	5.16	74.09	1.5							1.50	1.54
2.20	0.42	67.82	95.26	4.95	4.74	74.65	1.5							1.50	1.54
2.60	4.74	74.65	100.00	8.25			1.5							1.01	1.51

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 5 SAMPLE ID - 2 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 57.57 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	40.04	2.55	40.04	2.55	59.96	10.17		3.0							0.90	0.90
1.40	49.78	3.67	89.82	3.17	10.18	41.98		0.5							1.32	1.13
1.50	3.81	17.27	93.63	3.74	6.37	56.76		0.5							1.33	1.14
1.55	1.12	26.39	94.75	4.01	5.25	63.24		0.5							1.21	1.14
1.60	0.51	31.94	95.26	4.16	4.74	66.61		0.5							1.30	1.14
1.65	0.33	33.48	95.59	4.26	4.41	69.08		0.5							1.60	1.14
1.70	0.32	37.94	95.91	4.38	4.09	71.52		0.5							1.40	1.14
1.75	0.34	42.24	96.25	4.51	3.75	74.17		0.5							1.30	1.15
1.80	0.14	47.24	96.39	4.57	3.61	75.22		0.5							1.26	1.15
1.90	0.44	54.20	96.83	4.80	3.17	78.14		0.5							1.40	1.15
2.00	0.30	57.36	97.13	4.96	2.87	80.31		0.5							1.30	1.15
2.60	2.87	80.31	100.00	7.12				0.5							1.06	1.14

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 26.83 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	56.86	2.68	56.86	2.68	43.14	9.55		3.0							1.33	1.33
1.40	36.21	4.42	93.07	3.36	6.93	36.33		2.0							1.14	1.26
1.50	2.70	14.06	95.77	3.66	4.23	50.54		2.0							1.02	1.25
1.55	0.64	22.16	96.41	3.78	3.59	55.60		2.0							1.20	1.25
1.60	0.45	25.44	96.86	3.88	3.14	59.92		2.0							1.14	1.25
1.65	0.27	32.56	97.13	3.96	2.87	62.50		2.0							1.26	1.25
1.70	0.18	33.20	97.31	4.02	2.69	64.46		2.0							0.96	1.25
1.75	0.16	37.72	97.47	4.07	2.53	66.15		2.0							0.88	1.25
1.80	0.13	42.48	97.60	4.12	2.40	67.43		2.0							0.72	1.25
1.90	0.24	46.72	97.84	4.23	2.16	69.73		2.0							0.90	1.25
2.00	0.16	50.62	98.00	4.30	2.00	71.26		2.0							0.76	1.25
2.60	2.00	71.26	100.00	5.64				2.0							0.62	1.23

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 5 SAMPLE ID - 2 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00 RELATIVE WEIGHT % - 15.60 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	94.86	9.11	94.86	9.11	5.14	22.84								0.86	0.86
45.00	4.25	13.10	99.11	9.28	0.89	69.37								1.04	0.87
300.00	0.89	69.37	100.00	9.82										0.59	0.87

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 5 SAMPLE ID - 2 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 57.57 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	96.83	4.80	96.83	4.80	3.17	78.66		0.5							1.40	1.40
2.00	0.30	57.36	97.13	4.96	2.87	80.88		0.5							1.30	1.40
2.10	0.16	61.32	97.29	5.06	2.71	82.04		0.5							1.10	1.40
2.20	0.10	65.56	97.39	5.12	2.61	82.67		0.5							1.22	1.40
2.60	2.61	82.67	100.00	7.14				0.5							1.05	1.39

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 26.83 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	97.84	4.23	97.84	4.23	2.16	69.73		2.0							0.90	0.90
2.00	0.16	50.62	98.00	4.31	2.00	71.25		2.0							0.76	0.90
2.10	0.19	56.28	98.19	4.41	1.81	72.83		2.0							0.98	0.90
2.20	0.14	62.42	98.33	4.49	1.67	73.70		2.0							0.86	0.90
2.60	1.67	73.70	100.00	5.64				2.0							0.56	0.89

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 3 SAMPLE ID - 9 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 57.03 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	44.30	1.45	44.30	1.45	55.70	41.15		6.0							0.81	0.81
1.40	15.86	6.69	60.16	2.83	39.84	54.87		5.0							0.99	0.86
1.50	4.43	20.59	64.59	4.05	35.41	59.15		4.0							1.08	0.87
1.55	2.00	28.48	66.59	4.78	33.41	60.99		3.0							1.10	0.88
1.60	1.75	33.68	68.34	5.52	31.66	62.50		3.0							1.05	0.88
1.65	1.38	36.49	69.72	6.14	30.28	63.69		3.0							1.23	0.89
1.70	1.33	40.19	71.05	6.77	28.95	64.77		3.0							1.29	0.90
1.75	1.60	42.13	72.65	7.55	27.35	66.09		3.0							1.47	0.91
1.80	0.65	46.50	73.30	7.90	26.70	66.57		3.0							1.07	0.91
1.90	1.24	48.89	74.54	8.58	25.46	67.43		3.0							1.15	0.92
2.00	1.47	49.44	76.01	9.37	23.99	68.53		3.0							1.35	0.92
2.60	23.99	68.53	100.00	23.56				1.0							1.14	0.98

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 26.68 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	49.68	1.23	49.68	1.23	50.32	30.54		6.0							0.98	0.98
1.40	21.60	5.47	71.28	2.51	28.72	49.40		5.0							1.16	1.03
1.50	3.89	21.14	75.17	3.48	24.83	53.83		4.0							0.90	1.03
1.55	1.32	29.27	76.49	3.92	23.51	55.20		3.5							0.89	1.03
1.60	1.20	32.60	77.69	4.37	22.31	56.42		3.5							1.12	1.03
1.65	1.69	35.32	79.38	5.03	20.62	58.15		3.5							1.10	1.03
1.70	0.62	39.80	80.00	5.30	20.00	58.72		3.5							0.98	1.03
1.75	1.19	40.30	81.19	5.81	18.81	59.88		3.5							1.14	1.03
1.80	0.68	47.52	81.87	6.15	18.13	60.35		3.5							1.18	1.03
1.90	0.96	50.24	82.83	6.67	17.17	60.91		3.5							1.00	1.03
2.00	0.94	52.84	83.77	7.18	16.23	61.38		3.5							0.94	1.03
2.60	16.23	61.38	100.00	15.98				2.0							0.98	1.02

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 3 SAMPLE ID - 9 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00

RELATIVE WEIGHT % - 16.29 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	87.60	12.52	87.60	12.52	12.40	46.53								0.86	0.86
45.00	3.23	29.78	90.83	13.13	9.17	52.44								1.22	0.87
60.00	0.86	41.03	91.69	13.40	8.31	53.62								1.63	0.88
90.00	0.43	43.48	92.12	13.54	7.88	54.17								1.71	0.88
300.00	7.88	54.17	100.00	16.74										1.04	0.90

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 3 SAMPLE ID - 9 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 57.03 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	74.54	8.58	74.54	8.58	25.46	67.43		3.0							1.15	1.15
2.00	1.47	49.44	76.01	9.37	23.99	68.53		3.0							1.35	1.15
2.10	1.85	51.78	77.86	10.38	22.14	69.93		3.0							1.40	1.16
2.20	1.71	58.75	79.57	11.42	20.43	70.87		3.0							1.09	1.16
2.60	20.43	70.87	100.00	23.56				1.0							1.12	1.15

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 26.68 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	82.83	6.67	82.83	6.67	17.17	60.91		3.5							1.00	1.00
2.00	0.94	52.84	83.77	7.19	16.23	61.38		3.5							0.94	1.00
2.10	1.14	57.10	84.91	7.86	15.09	61.70		3.5							1.10	1.00
2.20	1.13	57.48	86.04	8.51	13.96	62.04		3.5							1.08	1.00
2.60	13.96	62.04	100.00	15.98				2.0							0.96	1.00

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 4 SAMPLE ID - 10 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 67.39 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	42.57	1.87	42.57	1.87	57.43	18.08		8.5							0.66	0.66
1.40	37.69	5.75	80.26	3.69	19.74	41.61		7.0							0.69	0.67
1.50	9.52	18.37	89.78	5.25	10.22	63.25		6.5							0.86	0.69
1.55	1.25	25.76	91.03	5.53	8.97	68.48		6.5							0.97	0.70
1.60	0.81	32.21	91.84	5.77	8.16	72.08		6.5							0.91	0.70
1.65	0.49	37.01	92.33	5.93	7.67	74.32		6.5							0.95	0.70
1.70	0.62	42.28	92.95	6.17	7.05	77.14		6.5							0.97	0.70
1.75	0.52	45.58	93.47	6.39	6.53	79.65		6.5							1.16	0.71
1.80	0.38	52.08	93.85	6.58	6.15	81.35		6.5							0.94	0.71
1.90	0.63	52.72	94.48	6.89	5.52	84.62		6.5							1.28	0.71
2.00	0.42	60.74	94.90	7.12	5.10	86.59		6.5							1.18	0.71
2.60	5.10	86.59	100.00	11.18				6.0							1.32	0.74

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 23.22 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	48.59	2.73	48.59	2.73	51.41	13.38		8.0							0.84	0.84
1.40	36.37	5.37	84.96	3.86	15.04	32.75		7.0							0.84	0.84
1.50	7.75	17.71	92.71	5.02	7.29	48.74		7.0							0.87	0.84
1.55	1.70	22.83	94.41	5.34	5.59	56.62		7.0							0.84	0.84
1.60	0.99	27.05	95.40	5.56	4.60	62.98		7.0							0.95	0.84
1.65	0.72	31.90	96.12	5.76	3.88	68.75		7.0							0.92	0.84
1.70	0.32	36.98	96.44	5.86	3.56	71.60		7.0							1.00	0.84
1.75	0.40	42.30	96.84	6.02	3.16	75.31		7.0							0.88	0.84
1.80	0.23	46.58	97.07	6.11	2.93	77.57		7.0							0.96	0.85
1.90	0.32	50.34	97.39	6.26	2.61	80.91		7.0							0.98	0.85
2.00	0.25	59.10	97.64	6.39	2.36	83.22		7.0							1.11	0.85
2.60	2.36	83.22	100.00	8.21				7.0							0.85	0.85

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 4 SAMPLE ID - 10 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00 RELATIVE WEIGHT % - 9.39 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	94.05	6.49	94.05	6.49	5.95	31.14								0.69	0.69
45.00	2.91	16.60	96.96	6.79	3.04	45.05								1.00	0.70
60.00	0.19	17.20	97.15	6.81	2.85	46.91								0.66	0.70
90.00	0.21	29.97	97.36	6.86	2.64	48.26								0.65	0.70
300.00	2.64	48.26	100.00	7.96										1.20	0.71

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83001 SEAM - 4 SAMPLE ID - 10 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 67.39 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S.	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	94.48	6.89	94.48	6.89	5.52	84.62		6.5							1.28	1.28
2.00	0.42	60.74	94.90	7.13	5.10	86.59		6.5							1.18	1.28
2.10	0.40	67.22	95.30	7.38	4.70	88.24		6.5							1.32	1.28
2.20	0.19	70.84	95.49	7.51	4.51	88.97		6.5							0.96	1.28
2.60	4.51	88.97	100.00	11.18				6.0							1.33	1.28

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 23.22 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	97.39	6.26	97.39	6.26	2.61	80.91		7.0							0.98	0.98
2.00	0.25	59.10	97.64	6.40	2.36	83.22		7.0							1.11	0.98
2.10	0.26	62.85	97.90	6.55	2.10	85.74		7.0							0.88	0.98
2.20	0.10	64.11	98.00	6.60	2.00	86.82		7.0							1.08	0.98
2.60	2.00	86.82	100.00	8.21				7.0							0.84	0.98

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 18 SAMPLE ID - 3 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 73.63 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	19.30	1.12	19.30	1.12	80.70	39.92		5.0							0.63	0.63
1.40	38.46	2.91	57.76	2.31	42.24	73.62		1.5							0.62	0.62
1.50	1.72	17.53	59.48	2.75	40.52	76.00		1.5							0.63	0.62
1.55	0.72	28.96	60.20	3.07	39.80	76.85		1.5							0.86	0.63
1.60	0.66	32.16	60.86	3.38	39.14	77.60		1.5							0.96	0.63
1.65	0.60	39.76	61.46	3.74	38.54	78.19		1.5							1.08	0.63
1.70	0.80	43.70	62.26	4.25	37.74	78.93		1.5							0.94	0.64
1.75	1.19	46.08	63.45	5.03	36.55	79.99		1.5							1.04	0.65
1.80	1.10	52.66	64.55	5.85	35.45	80.84		1.5							1.00	0.65
1.90	1.86	55.54	66.41	7.24	33.59	82.24		1.5							1.16	0.67
2.00	1.67	59.00	68.08	8.51	31.92	83.46		1.0							1.18	0.68
2.60	31.92	83.46	100.00	32.43				0.0							1.19	0.84

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 18.19 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	43.61	1.25	43.61	1.25	56.39	36.67		5.0							1.32	1.32
1.40	27.29	4.45	70.90	2.48	29.10	66.89		3.5							0.54	1.02
1.50	2.16	18.58	73.06	2.96	26.94	70.76		3.0							1.34	1.03
1.55	0.85	29.22	73.91	3.26	26.09	72.11		3.0							1.28	1.03
1.60	0.94	32.58	74.85	3.63	25.15	73.59		3.0							1.36	1.04
1.65	0.75	39.70	75.60	3.99	24.40	74.63		3.0							1.44	1.04
1.70	0.68	42.16	76.28	4.33	23.72	75.56		3.0							1.42	1.04
1.75	0.66	47.28	76.94	4.69	23.06	76.37		3.0							1.44	1.05
1.80	0.84	50.92	77.78	5.19	22.22	77.33		3.0							1.80	1.06
1.90	1.44	56.48	79.22	6.13	20.78	78.78		3.0							1.52	1.06
2.00	1.30	61.24	80.52	7.02	19.48	79.95		3.0							1.56	1.07
2.60	19.48	79.95	100.00	21.22				2.5							1.51	1.16

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 18 SAMPLE ID - 3 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	RELATIVE WEIGHT % - CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	8.18 ASH % - CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	92.60	11.11	92.60	11.11	7.40	76.58								1.06	1.06
45.00	1.58	47.84	94.18	11.73	5.82	84.38								1.38	1.07
60.00	0.40	76.35	94.58	12.00	5.42	84.98								2.27	1.07
90.00	0.24	77.58	94.82	12.17	5.18	85.32								4.43	1.08
300.00	5.18	85.32	100.00	15.95										1.78	1.12

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 18 SAMPLE ID - 3 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 73.63 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI (MJ|KG)	C.V.	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	66.41	7.24	66.41	7.24	33.59	82.25		1.5							1.16	1.16
2.00	1.67	59.00	68.08	8.51	31.92	83.46		1.0							1.18	1.16
2.10	2.18	61.78	70.26	10.16	29.74	85.05		0.5							1.10	1.16
2.20	2.63	71.56	72.89	12.38	27.11	86.36		0.5							0.96	1.15
2.60	27.11	86.36	100.00	32.43				0.0							1.22	1.17

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 18.19 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI (MJ|KG)	C.V.	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	79.22	6.13	79.22	6.13	20.78	78.78		3.0							1.52	1.52
2.00	1.30	61.24	80.52	7.02	19.48	79.95		3.0							1.56	1.52
2.10	1.46	67.16	81.98	8.09	18.02	80.99		3.0							1.62	1.52
2.20	1.72	73.70	83.70	9.44	16.30	81.76		3.0							1.34	1.52
2.60	16.30	81.76	100.00	21.23				2.5							1.52	1.52

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 19 SAMPLE ID - 4 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 78.68 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	5.51	1.35	5.51	1.35	94.49	19.36		2.0						0.77	0.77
1.40	72.78	3.10	78.29	2.98	21.71	73.86		0.0						0.73	0.73
1.50	1.74	14.78	80.03	3.23	19.97	79.01		0.0						0.74	0.73
1.55	0.32	22.70	80.35	3.31	19.65	79.92		0.0						1.28	0.74
1.60	0.18	28.48	80.53	3.37	19.47	80.40		0.0						1.16	0.74
1.65	0.09	32.38	80.62	3.40	19.38	80.62		0.0						1.10	0.74
1.70	0.10	37.96	80.72	3.44	19.28	80.84		0.0						1.36	0.74
1.75	0.15	42.68	80.87	3.52	19.13	81.14		0.0						1.18	0.74
1.80	0.12	49.38	80.99	3.58	19.01	81.34		0.0						1.46	0.74
1.90	0.39	54.98	81.38	3.83	18.62	81.90		0.0						1.36	0.74
2.00	0.68	62.26	82.06	4.31	17.94	82.64		0.0						1.40	0.75
2.60	17.94	82.64	100.00	18.37				0.0						1.50	0.88

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 15.34 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	47.49	1.22	47.49	1.22	52.51	22.66		2.0						0.93	0.93
1.40	34.66	3.16	82.15	2.04	17.85	60.52		0.0						0.84	0.89
1.50	2.45	12.40	84.60	2.34	15.40	68.18		0.0						0.64	0.88
1.55	0.45	20.84	85.05	2.44	14.95	69.60		0.0						0.78	0.88
1.60	0.39	24.60	85.44	2.54	14.56	70.81		0.0						0.58	0.88
1.65	0.26	29.93	85.70	2.62	14.30	71.55		0.0						0.99	0.88
1.70	0.25	33.26	85.95	2.71	14.05	72.23		0.0						0.81	0.88
1.75	0.19	44.11	86.14	2.80	13.86	72.62		0.0						1.01	0.88
1.80	0.29	46.66	86.43	2.95	13.57	73.18		0.0						0.90	0.88
1.90	0.40	52.02	86.83	3.17	13.17	73.82		0.0						0.82	0.88
2.00	0.57	62.50	87.40	3.56	12.60	74.33		0.0						1.00	0.88
2.60	12.60	74.33	100.00	12.48				0.0						1.11	0.91

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 19 SAMPLE ID - 4 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00 RELATIVE WEIGHT % - 5.98 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. VOL.	CUM. MOIST	CUM. MOIST
30.00	92.44	8.24	92.44	8.24	7.56	68.47						1.72	1.72
45.00	2.72	47.36	95.16	9.36	4.84	80.34						1.12	1.70
60.00	0.73	71.66	95.89	9.83	4.11	81.88						1.41	1.70
90.00	0.34	78.77	96.23	10.08	3.77	82.16						2.13	1.70
300.00	3.77	82.16	100.00	12.79								1.08	1.68

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 19 SAMPLE ID - 4 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 78.68 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	81.38	3.83	81.38	3.83	18.62	81.89		0.0							1.36	1.36
2.00	0.68	62.26	82.06	4.31	17.94	82.64		0.0							1.40	1.36
2.10	1.13	66.32	83.19	5.16	16.81	83.73		0.0							1.64	1.36
2.20	0.83	72.26	84.02	5.82	15.98	84.33		0.0							1.62	1.37
2.60	15.98	84.33	100.00	18.37				0.0							1.48	1.38

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 15.34 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	86.83	3.17	86.83	3.17	13.17	73.82		0.0							0.82	0.82
2.00	0.57	62.50	87.40	3.56	12.60	74.33		0.0							1.00	0.82
2.10	0.81	66.42	88.21	4.13	11.79	74.88		0.0							1.12	0.82
2.20	0.86	68.24	89.07	4.75	10.93	75.40		0.0							0.92	0.82
2.60	10.93	75.40	100.00	12.47				0.0							1.12	0.86

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 19 SAMPLE ID - 5 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 80.04 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	0.80	1.66	0.80	1.66	99.20	69.41		2.5							0.85	0.85
1.40	15.00	4.21	15.80	4.08	84.20	81.02		0.5							0.87	0.87
1.50	0.91	17.24	16.71	4.80	83.29	81.72		0.5							1.04	0.88
1.55	0.40	25.88	17.11	5.29	82.89	81.99		0.5							0.96	0.88
1.60	0.56	32.26	17.67	6.15	82.33	82.33		0.5							0.92	0.88
1.65	0.58	35.14	18.25	7.07	81.75	82.66		0.5							0.92	0.88
1.70	0.50	37.40	18.75	7.88	81.25	82.94		0.5							1.06	0.89
1.75	0.44	41.76	19.19	8.65	80.81	83.17		0.5							0.88	0.89
1.80	0.55	46.92	19.74	9.72	80.26	83.42		0.5							1.00	0.89
1.90	1.37	53.18	21.11	12.54	78.89	83.94		0.5							1.20	0.91
2.00	1.71	55.54	22.82	15.76	77.18	84.57		0.5							1.00	0.92
2.60	77.18	84.57	100.00	68.87				0.0							0.95	0.94

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 13.46 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	12.62	3.72	12.62	3.72	87.38	58.72		1.5							0.90	0.90
1.40	19.85	4.16	32.47	3.99	67.53	74.76		0.5							0.96	0.94
1.50	1.80	14.28	34.27	4.53	65.73	76.42		0.5							0.82	0.93
1.55	0.73	23.70	35.00	4.93	65.00	77.01		0.5							0.82	0.93
1.60	0.63	28.72	35.63	5.35	64.37	77.49		0.5							0.62	0.92
1.65	0.81	33.42	36.44	5.97	63.56	78.05		0.5							0.74	0.92
1.70	0.48	39.30	36.92	6.41	63.08	78.34		0.5							0.88	0.92
1.75	0.64	45.80	37.56	7.08	62.44	78.67		0.5							0.86	0.92
1.80	0.67	50.42	38.23	7.84	61.77	78.98		0.5							0.72	0.91
1.90	1.34	53.44	39.57	9.38	60.43	79.55		0.5							0.82	0.91
2.00	1.30	58.08	40.87	10.93	59.13	80.02		0.5							0.78	0.91
2.60	59.13	80.02	100.00	51.78				0.0							0.59	0.72

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 19 SAMPLE ID - 5 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00 RELATIVE WEIGHT % - 6.50 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	70.13	28.21	70.13	28.21	29.87	85.46								0.73	0.73
45.00	3.92	63.36	74.05	30.07	25.95	88.79								0.96	0.74
60.00	1.87	77.23	75.92	31.23	24.08	89.69								0.96	0.75
90.00	1.76	83.88	77.68	32.43	22.32	90.15								1.02	0.75
300.00	22.32	90.15	100.00	45.31										0.92	0.79

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 19 SAMPLE ID - 5 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 80.04 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	21.11	12.54	21.11	12.54	78.89	83.94	0.5							1.20	1.20
2.00	1.71	55.54	22.82	15.76	77.18	84.57	0.5							1.00	1.19
2.10	2.27	61.70	25.09	19.92	74.91	85.26	0.5							1.06	1.17
2.20	2.00	67.78	27.09	23.45	72.91	85.74	0.5							0.90	1.15
2.60	72.91	85.74	100.00	68.87			0.0							0.95	1.01

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 13.46 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	39.57	9.38	39.57	9.38	60.43	79.55	0.5							0.82	0.82
2.00	1.30	58.08	40.87	10.93	59.13	80.02	0.5							0.78	0.82
2.10	2.07	64.20	42.94	13.50	57.06	80.60	0.5							0.94	0.82
2.20	1.76	69.50	44.70	15.70	55.30	80.95	0.5							0.96	0.83
2.60	55.30	80.95	100.00	51.78			0.0							0.56	0.68

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 21 SAMPLE ID - 6 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 73.52 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	8.89	2.17	8.89	2.17	91.11	52.57	8.5							0.50	0.50
1.40	25.92	5.31	34.81	4.51	65.19	71.36	3.0							0.37	0.40
1.50	6.71	18.50	41.52	6.77	58.48	77.42	2.0							0.48	0.42
1.55	2.15	31.25	43.67	7.97	56.33	79.18	2.0							0.67	0.43
1.60	1.63	32.89	45.30	8.87	54.70	80.56	2.0							0.72	0.44
1.65	1.33	35.08	46.63	9.62	53.37	81.70	2.0							0.83	0.45
1.70	1.16	39.70	47.79	10.35	52.21	82.63	2.0							0.91	0.46
1.75	1.17	45.66	48.96	11.19	51.04	83.48	2.0							0.78	0.47
1.80	0.58	46.12	49.54	11.60	50.46	83.91	2.0							0.96	0.47
1.90	1.58	51.86	51.12	12.85	48.88	84.94	2.0							1.04	0.49
2.00	1.30	59.82	52.42	14.01	47.58	85.63	2.0							1.08	0.51
2.60	47.58	85.63	100.00	48.09			0.0							1.31	0.89

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 17.80 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	31.03	2.36	31.03	2.36	68.97	45.83	7.5							0.69	0.69
1.40	22.76	6.05	53.79	3.92	46.21	65.42	5.0							0.74	0.71
1.50	5.20	17.96	58.99	5.16	41.01	71.44	5.0							0.61	0.70
1.55	1.54	24.88	60.53	5.66	39.47	73.25	5.0							0.72	0.70
1.60	1.78	29.58	62.31	6.34	37.69	75.32	5.0							0.60	0.70
1.65	0.69	34.68	63.00	6.65	37.00	76.08	5.0							0.60	0.70
1.70	0.57	38.84	63.57	6.94	36.43	76.66	5.0							0.67	0.70
1.75	0.75	42.36	64.32	7.36	35.68	77.38	4.5							0.44	0.70
1.80	0.44	45.22	64.76	7.61	35.24	77.78	4.5							0.56	0.69
1.90	1.15	52.18	65.91	8.39	34.09	78.64	4.5							0.44	0.69
2.00	0.72	60.30	66.63	8.95	33.37	79.04	4.5							0.72	0.69
2.60	33.37	79.04	100.00	32.34			3.0							0.71	0.70

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 21 SAMPLE ID - 6 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	RELATIVE WEIGHT % - CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	8.68 ASH % - CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	79.42	14.53	79.42	14.53	20.58	82.17							0.57	0.57
45.00	4.26	58.82	83.68	16.78	16.32	88.27							0.86	0.58
60.00	1.22	79.72	84.90	17.69	15.10	88.96							1.14	0.59
90.00	0.78	83.45	85.68	18.29	14.32	89.26							1.10	0.60
300.00	14.32	89.26	100.00	28.45									1.05	0.66

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83002 SEAM - 21 SAMPLE ID - 6 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 73.52 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	51.12	12.85	51.12	12.85	48.88	84.94		2.0							1.04	1.04
2.00	1.30	59.82	52.42	14.01	47.58	85.63		2.0							1.08	1.04
2.10	1.43	64.08	53.85	15.34	46.15	86.30		2.0							1.22	1.05
2.20	1.03	69.62	54.88	16.36	45.12	86.68		2.0							1.46	1.05
2.60	45.12	86.68	100.00	48.09				0.0							1.31	1.17

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 17.80 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	65.91	8.39	65.91	8.39	34.09	78.64		4.5							0.44	0.44
2.00	0.72	60.30	66.63	8.95	33.37	79.04		4.5							0.72	0.44
2.10	1.35	66.76	67.98	10.10	32.02	79.56		4.5							0.66	0.45
2.20	0.73	69.14	68.71	10.73	31.29	79.80		4.5							0.78	0.45
2.60	31.29	79.80	100.00	32.34				3.0							0.71	0.53

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83003 SEAM - 9 SAMPLE ID - 7 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 64.88 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	42.39	1.90	42.39	1.90	57.61	12.10		6.5							0.66	0.66
1.40	41.95	5.11	84.34	3.50	15.66	30.84		2.5							0.61	0.64
1.50	4.50	18.53	88.84	4.26	11.16	35.80		2.5							0.73	0.64
1.55	1.87	23.41	90.71	4.65	9.29	38.29		2.5							0.60	0.64
1.60	1.78	25.48	92.49	5.05	7.51	41.33		2.5							0.67	0.64
1.65	1.34	28.09	93.83	5.38	6.17	44.21		2.5							0.66	0.64
1.70	1.59	29.77	95.42	5.79	4.58	49.22		2.5							0.66	0.64
1.75	1.19	32.86	96.61	6.12	3.39	54.96		2.5							0.71	0.64
1.80	0.67	34.62	97.28	6.32	2.72	59.97		2.5							0.65	0.64
1.90	0.82	35.23	98.10	6.56	1.90	70.64		2.5							0.62	0.64
2.00	0.34	39.74	98.44	6.68	1.56	77.38		2.5							0.59	0.64
2.60	1.56	77.38	100.00	7.78				2.5							1.24	0.65

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 23.66 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	57.69	1.60	57.69	1.60	42.31	9.25		8.0							1.00	1.00
1.40	34.72	4.32	92.41	2.62	7.59	31.79		4.0							2.47	1.55
1.50	2.41	10.17	94.82	2.81	5.18	41.85		4.0							0.81	1.53
1.55	0.54	13.50	95.36	2.87	4.64	45.15		4.0							0.50	1.53
1.60	0.38	24.08	95.74	2.96	4.26	47.03		4.0							0.54	1.52
1.65	0.32	27.32	96.06	3.04	3.94	48.63		4.0							0.68	1.52
1.70	0.37	28.90	96.43	3.14	3.57	50.67		4.0							0.64	1.52
1.75	0.29	33.86	96.72	3.23	3.28	52.16		4.0							0.70	1.52
1.80	0.26	36.62	96.98	3.32	3.02	53.50		4.0							0.56	1.51
1.90	0.33	37.78	97.31	3.44	2.69	55.42		4.0							0.40	1.51
2.00	0.34	40.60	97.65	3.57	2.35	57.57		4.0							0.48	1.51
2.60	2.35	57.57	100.00	4.84				4.0							0.49	1.48

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83003 SEAM - 9 SAMPLE ID - 7 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00 RELATIVE WEIGHT % - 11.46 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	97.05	5.46	97.05	5.46	2.95	33.22								0.73	0.73
45.00	1.88	20.64	98.93	5.75	1.07	55.32								0.82	0.73
60.00	0.20	43.48	99.13	5.82	0.87	58.04								1.80	0.73
90.00	0.07	55.32	99.20	5.86	0.80	58.28								0.68	0.73
300.00	0.80	58.28	100.00	6.28										0.32	0.73

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83003 SEAM - 9 SAMPLE ID - 7 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 64.88 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	98.10	6.56	98.10	6.56	1.90	70.64	2.5							0.62	0.62
2.00	0.34	39.74	98.44	6.67	1.56	77.38	2.5							0.59	0.62
2.10	0.21	49.64	98.65	6.77	1.35	81.69	2.5								
2.20	0.12	64.08	98.77	6.84	1.23	83.41	2.5							1.26	
2.60	1.23	83.41	100.00	7.78			2.5							1.32	

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 23.66 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	CUM. FSI	C.V. FSI (MJ|KG)	CUM. C.V.	CUM. S	CUM. S	CUM. VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	97.31	3.44	97.31	3.44	2.69	55.43	4.0							0.40	0.40
2.00	0.34	40.64	97.65	3.57	2.35	57.57	4.0							0.48	0.40
2.10	0.34	43.34	97.99	3.71	2.01	59.98	4.0							0.56	0.40
2.20	0.29	47.88	98.28	3.84	1.72	62.02	4.0							0.48	0.40
2.60	1.72	62.02	100.00	4.84			4.0							0.48	0.40

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83003 SEAM - 10 SAMPLE ID - 8 WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 70.18 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	51.76	2.66	51.76	2.66	48.24	41.68		7.5							0.70	0.70
1.40	14.86	12.98	66.62	4.96	33.38	54.46		7.0							0.79	0.72
1.50	1.31	24.92	67.93	5.35	32.07	55.67		6.5							0.66	0.72
1.55	0.86	33.00	68.79	5.69	31.21	56.29		6.5							0.60	0.72
1.60	2.19	38.35	70.98	6.70	29.02	57.64		6.5							0.58	0.71
1.65	2.47	43.37	73.45	7.93	26.55	58.97		6.5							0.46	0.70
1.70	1.73	46.87	75.18	8.83	24.82	59.82		6.5							0.65	0.70
1.75	1.57	50.50	76.75	9.68	23.25	60.44		6.5							0.65	0.70
1.80	2.39	53.85	79.14	11.02	20.86	61.20		6.0							0.62	0.70
1.90	8.32	54.34	87.46	15.14	12.54	65.75		5.5							0.71	0.70
2.00	10.31	64.35	97.77	20.33	2.23	72.23		5.5							0.72	0.70
2.60	2.23	72.23	100.00	21.48				5.5							0.75	0.70

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 19.46 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.30	65.95	6.65	65.95	6.65	34.05	40.11		7.5							0.92	0.92
1.40	10.83	10.94	76.78	7.26	23.22	53.72		7.5							0.64	0.88
1.50	2.52	18.68	79.30	7.62	20.70	57.98		7.5							0.82	0.88
1.55	1.07	29.74	80.37	7.91	19.63	59.52		7.5							0.88	0.88
1.60	1.55	36.76	81.92	8.46	18.08	61.48		7.5							0.94	0.88
1.65	1.84	42.08	83.76	9.20	16.24	63.67		7.5							0.92	0.88
1.70	0.75	48.24	84.51	9.54	15.49	64.42		7.5							0.72	0.88
1.75	1.13	49.40	85.64	10.07	14.36	65.60		7.5							0.84	0.88
1.80	1.08	54.48	86.72	10.62	13.28	66.51		7.5							0.84	0.88
1.90	3.30	60.06	90.02	12.43	9.98	68.64		7.5							0.78	0.87
2.00	3.69	64.48	93.71	14.48	6.29	71.08		7.5							0.60	0.86
2.60	6.29	71.08	100.00	18.04				7.5							0.79	0.86

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83003 SEAM - 10 SAMPLE ID - 8 WASHABILITY ID - WA1

ANALYSIS TYPE - FROTH

FRACTION SIZE(MM) 0.15 X 0.00 RELATIVE WEIGHT % - 10.36 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
30.00	95.63	11.15	95.63	11.15	4.37	53.82										
45.00	3.57	52.64	99.20	12.64	0.80	59.10										
60.00	0.22	58.39	99.42	12.74	0.58	59.36										
90.00	0.05	58.92	99.47	12.77	0.53	59.41										
300.00	0.53	59.41	100.00	13.01												

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GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 15/83 WASHABILITY REPORT 2 PAGE -

DATA SOURCE - GDRMBDDH83003 SEAM - 10 SAMPLE ID - 8 WASHABILITY ID - WA2

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 9.50 X 0.60 RELATIVE WEIGHT % - 70.18 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	CUM. C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	87.46	15.14	87.46	15.14	12.54	65.75		5.5							0.71	0.71
2.00	10.31	64.35	97.77	20.33	2.23	72.23		5.5							0.72	0.71
2.10	1.44	69.55	99.21	21.04	0.79	77.11		5.5							0.71	0.71
2.20	0.13	73.30	99.34	21.11	0.66	77.86		5.5							0.92	0.71
2.60	0.66	77.86	100.00	21.49				5.5							0.80	0.71

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM) 0.60 X 0.15 RELATIVE WEIGHT % - 19.46 ASH % -

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%	FSI	CUM. FSI	CUM. C.V. (MJ|KG)	CUM. C.V.	S	CUM. S	VOL.	CUM. VOL.	MOIST	CUM. MOIST
1.90	90.02	12.43	90.02	12.43	9.98	68.64		7.5							0.78	0.78
2.00	3.69	64.48	93.71	14.48	6.29	71.08		7.5							0.60	0.77
2.10	3.85	68.56	97.56	16.61	2.44	75.05		7.5							0.70	0.77
2.20	0.82	71.74	98.38	17.07	1.62	76.72		7.5							0.98	0.77
2.60	1.62	76.72	100.00	18.04				7.5							0.90	0.77

GCRI -COAL DIVISION
COAL PROCESSING SIMULATOR

WASH DATA SET REPORT

REPORT TYPE : BLENDED DATA SET(S)

ADJUSTMENTS PERFORMED

THEORETICAL ASH :YES
MISSING MATERIAL :NO
SIZE :NO
OUT OF SEAM :NO

MINE PERIOD PLAN1

----------FLOAT----------

FRACTION SIZE (MM) 9.50 X 0.60 RELATIVE WT% - 67.22 ASH% - 0.0

SG-TME	ELEMENTAL WT%	ELEMENTAL ASH%	CUM. FLOATS WT%	CUM. FLOATS ASH%	CUM. SINKS WT%	CUM. SINKS ASH%
1.30	28.51	2.11	28.51	2.11	71.49	22.20
1.35	33.35	2.73	61.86	2.45	38.14	39.23
1.40	15.43	6.16	77.28	3.19	22.72	61.69
1.45	2.10	15.73	79.38	3.52	20.62	66.37
1.50	0.99	21.85	80.37	3.74	19.63	68.62
1.55	0.94	26.28	81.31	4.00	18.69	70.74
1.60	0.77	31.52	82.09	4.26	17.91	72.44
1.65	0.63	36.37	82.72	4.51	17.28	73.75
1.70	0.64	38.99	83.36	4.77	16.64	75.10
1.80	1.24	46.05	84.60	5.38	15.40	77.43
1.90	1.33	53.11	85.93	6.12	14.07	79.73
2.60	14.07	79.73	100.00	16.48	0.00	0.00

GCRI -COAL DIVISION
COAL PROCESSING SIMULATOR

WASH DATA SET REPORT

REPORT TYPE : BLENDED DATA SET(S)

ADJUSTMENTS PERFORMED

THEORETICAL ASH :YES
MISSING MATERIAL :NO
SIZE :NO
OUT OF SEAM :NO

MINE PERIOD PLAN1

---FLOAT---

FRACTION SIZE (MM) 0.60 X 0.15 RELATIVE WT% - 21.72 ASH% - 0.0

	ELEMENTAL		CUM. FLOATS		CUM. SINKS	
SG-TME	WT%	ASH%	WT%	ASH%	WT%	ASH%
1.30	53.45	2.39	53.45	2.39	46.55	19.07
1.35	21.79	3.50	75.24	2.71	24.76	32.77
1.40	10.47	6.37	85.71	3.16	14.29	52.13
1.45	1.73	12.96	87.44	3.35	12.56	57.52
1.50	1.14	18.36	88.58	3.54	11.42	61.42
1.55	0.74	23.70	89.32	3.71	10.68	64.04
1.60	0.63	29.23	89.95	3.89	10.05	66.23
1.65	0.53	35.74	90.48	4.08	9.52	67.93
1.70	0.35	37.76	90.83	4.21	9.17	69.08
1.80	0.73	45.46	91.57	4.54	8.43	71.13
1.90	0.67	53.94	92.24	4.90	7.76	72.61
2.60	7.76	72.61	100.00	10.15	0.00	0.00

GCRI -COAL DIVISION
COAL PROCESSING SIMULATOR

WASH DATA SET REPORT

REPORT TYPE : BLENDED DATA SET(S)

ADJUSTMENTS PERFORMED

THEORETICAL ASH :YES
MISSING MATERIAL :NO
SIZE :NO
OUT OF SEAM :NO

MINE PERIOD PLAN1

----------FROTH----------

FRACTION SIZE (MM) 0.15 X 0.0 RELATIVE WT% - 11.05 ASH% - 0.0

	ELEMENTAL		CUM. FLOATS		CUM. SINKS	
SG-TME	WT%	ASH%	WT%	ASH%	WT%	ASH%
30.00	94.15	9.00	94.15	9.00	5.85	43.73
45.00	3.29	23.07	97.44	9.47	2.56	70.25
60.00	0.30	53.51	97.74	9.60	2.26	72.45
90.00	0.20	57.25	97.94	9.70	2.06	73.96
120.00	0.45	67.43	98.39	9.97	1.61	75.79
300.00	1.61	75.80	100.00	11.03	0.00	0.00

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
LICENCE MAP

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

PREPARED BY:
APPROVED BY: V.L.D. DATE: AUG. 83
SCALE 1: 100,000
DRAWING No. GDR-83-003

G 83 CL 01

534

Pg - Goodrich 83(2)a *(1)

Appendix 3

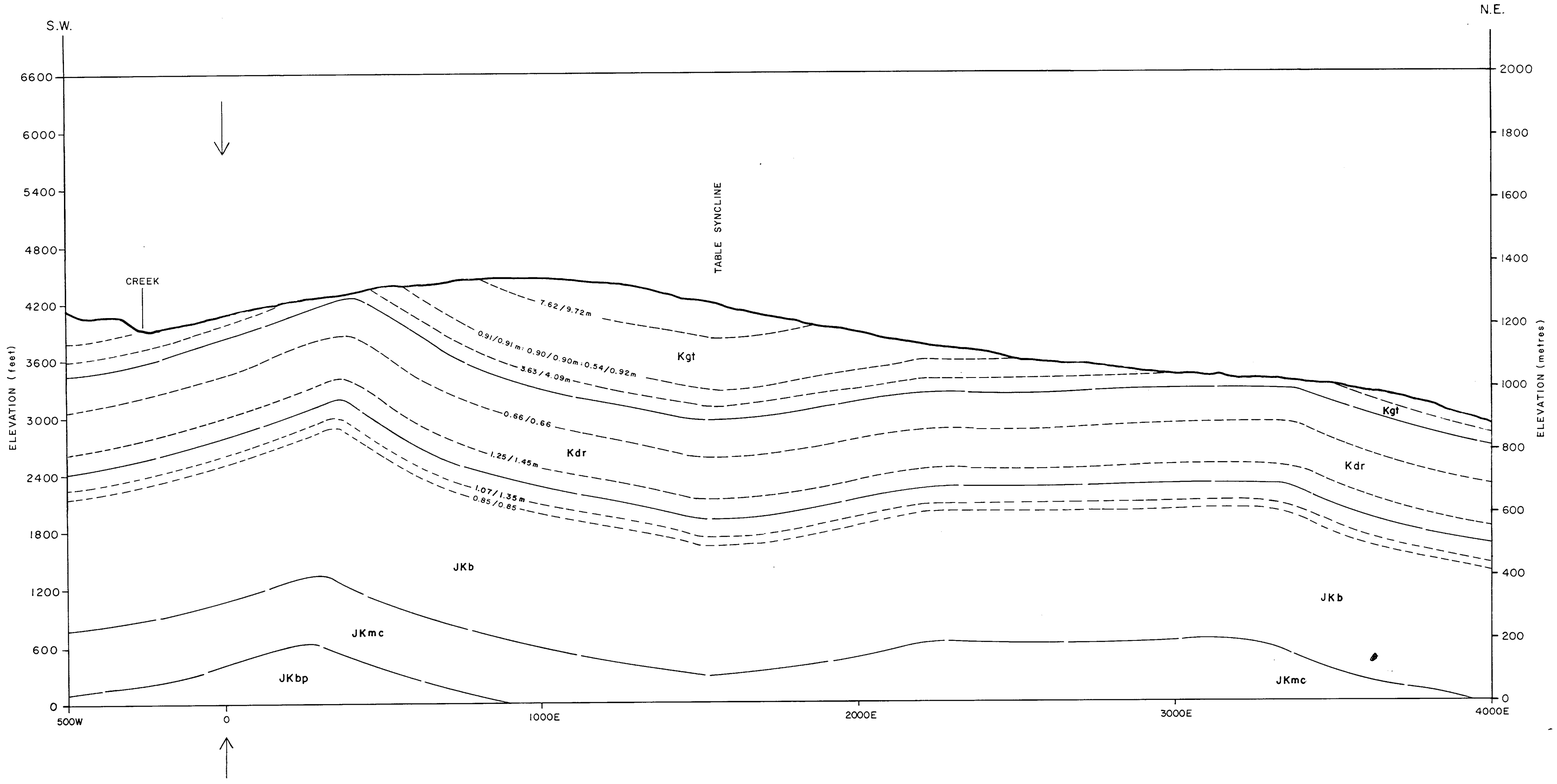
SCALE
MILES 0 2 4 6
KILOMETRES 0 2 4 6 8
SCALE 1 100000

TOPOGRAPHY DIGITIZED FROM NATIONAL TOPOGRAPHIC SERIES 1:250,000

UNIVERSAL TRANSVERSE MERCATOR PROJECTION
COMPUTER GENERATED APR./1980
BY SYSTEMS - EXPL. DATA PROCESSING & INTERACTIVE GRAPHICS, SECTIONS OF GULF CANADA LIMITED

94 58°00′
E F G H
D C B A
56°00′
M N O P
L K J I
93 54°00′
128°00′ 124°00′ 120°00′

123°00′ 30′ 122°00′ 30′ 55°00′
45′ 30′ 15′



LEGEND

Appendix A

- Q — *QUATERNARY* — Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — *MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
- Kbs — *BLUESKY* — Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — *GETHING FORMATION* — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
- Kdr — *DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — *BRENOT FORMATION* — Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION* — Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION* — Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION* — Dark grey and black shales, mudstones, sandstones, siltstones, marine

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS — BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

- GULF LICENCE BOUNDARIES
- BASELINE LOCATION
- COAL SEAM
- GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000 METRES

Pr-Goodrich 83/2a

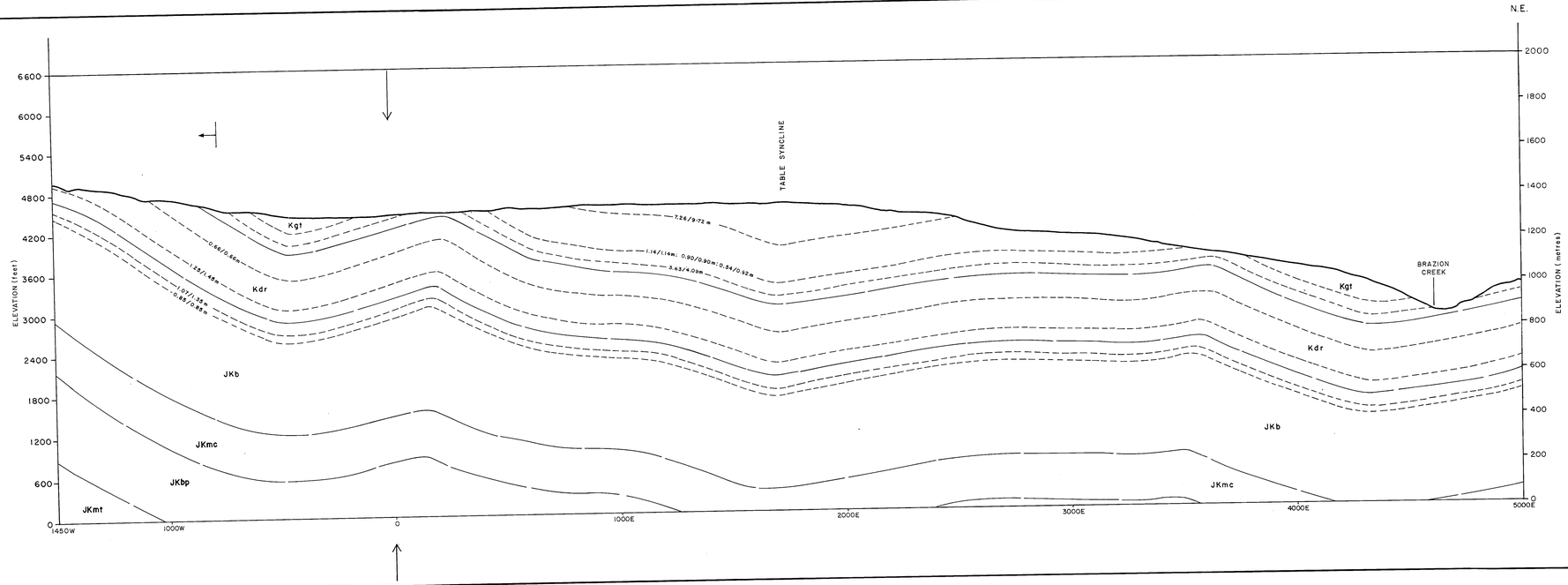
534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH — TABLE AREA
GEOLOGICAL CROSS SECTION
6000 NORTH

GS 83X 17

PREPARED BY: D. I., E. S. SCALE
APPROVED BY: V. L. D. DATE: Oct. 83 DRAWING No. GDR-83-24



LEGEND

Appendix A

- Q — QUATERNARY
  Glacial deposits & alluvium
- Kcm — COMMOTION FORMATION
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — MOOSEBAR FORMATION
  Mudstones, minor siltstones, marine
- Kbs — BLUESKY
  Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — GETHING FORMATION
  Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
- Kdr — DRESSER FORMATION
  Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — BRENOT FORMATION
  Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONACH FORMATION
  Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — BEATTIE PEAKS FORMATION
  Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
- JKmt — MONTEITH FORMATION
  Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — FERNIE FORMATION
  Dark grey and black shales, mudstones, sandstones, siltstones, marine

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS
BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

- GULF LICENCE BOUNDARIES
- BASELINE LOCATION
- COAL SEAM
- GEOLOGICAL CONTACT

SCALE 1:10,000
0 500 1000
METRES

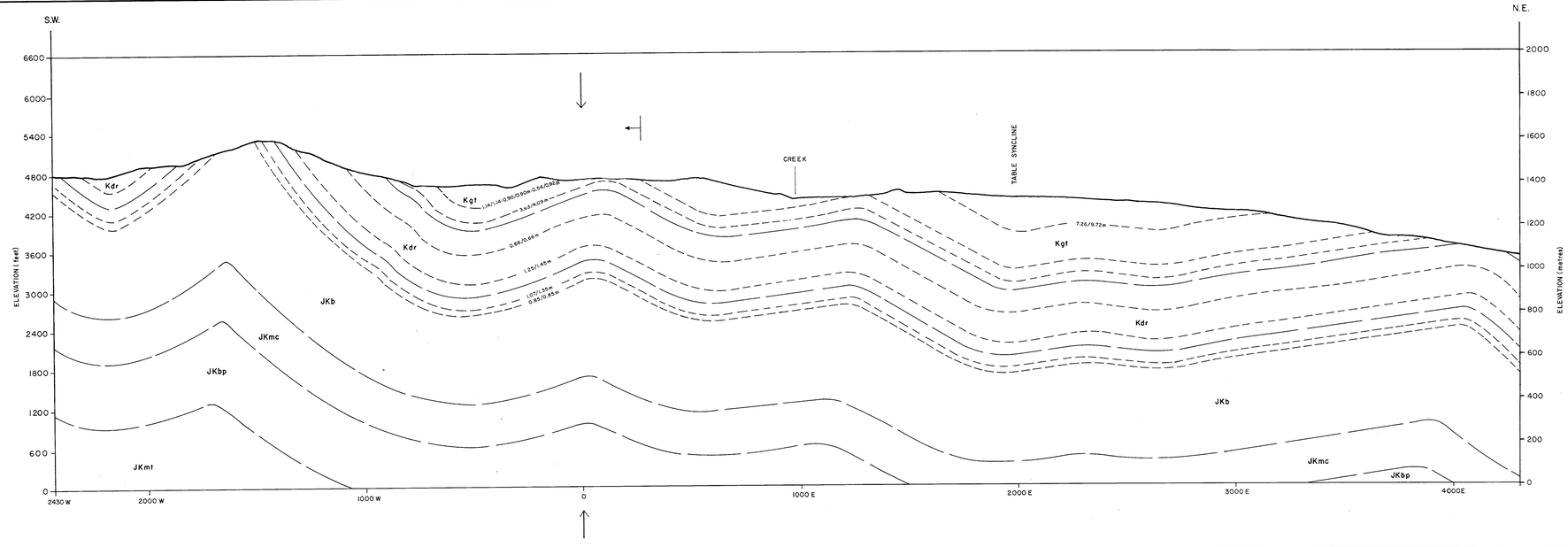
Dr. Goodrich 83/2A

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH - TABLE AREA
GEOLOGICAL CROSS SECTION
5000 NORTH 83 E 83 x/b

PREPARED BY:	D.I. E.S.	SCALE	
APPROVED BY:	V.L.D.	DATE: Oct. 83	DRAWING No. GDR-83-242



LEGEND

Appendix A

ELEVATION (metres)

- Q — *QUATERNARY*
  Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION*
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — *MOOSEBAR FORMATION*
  Mudstones, minor siltstones, marine
- Kbs — *BLUESKY*
  Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — *GETHING FORMATION*
  Cyclothems ; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones ; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit ; COAL
- Kdr — *DRESSER FORMATION*
  Incomplete cyclothems ; discontinuous coal measures in varying thicknesses ; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — *BRENOT FORMATION*
  Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION*
  Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION*
  Buff to brownish sandstones, fine to medium grained ; thinly bedded black and dark grey shales, silty shales, siltstones ; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION*
  Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION*
  Dark grey and black shales, mudstones, sandstones, siltstones, marine

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS
BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

GULF LICENCE BOUNDARIES
BASELINE LOCATION
COAL SEAM
GEOLOGICAL CONTACT

SCALE 1:10,000
0 500 1000
METRES

Pr-Goodrich 83 (2)A

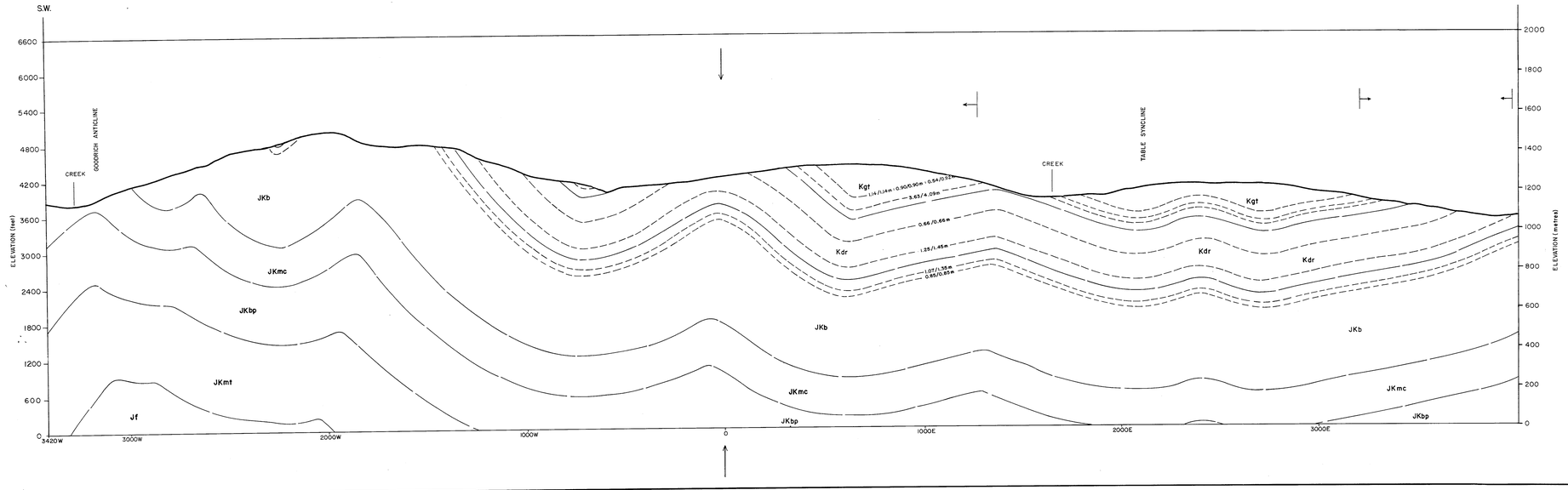
534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH — TABLE AREA
GEOLOGICAL CROSS SECTION
4000 NORTH

83-833x15

PREPARED BY: D.I. E.S. SCALE
APPROVED BY: V.L.D. DATE: Oct 83 DRAWING No. SDR-83-243



LEGEND

Appendix A

Q	*QUATERNARY* — Glacial deposits & alluvium
Kcm	*COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
Kmb	*MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
Kbs	*BLUESKY* — Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
Kgt	*GETHING FORMATION* — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
Kdr	*DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
JKb	*BRENOT FORMATION* — Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
JKmc	*MONACH FORMATION* — Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstone and sandstones with occasional thin conglomerates.
JKbp	*BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
JKmt	*MONTEITH FORMATION* — Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
Jf	*FERNIE FORMATION* — Dark grey and black shales, mudstones, sandstones, siltstones, marine

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS — BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000

METRES

534

Pe - Goodrich 83/2/9

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH — TABLE AREA
GEOLOGICAL CROSS SECTION
3000 NORTH

PREPARED BY: D.I. E.S. SCALE
APPROVED BY: V.L.D. DATE: DRAWING No. GGR-83-244

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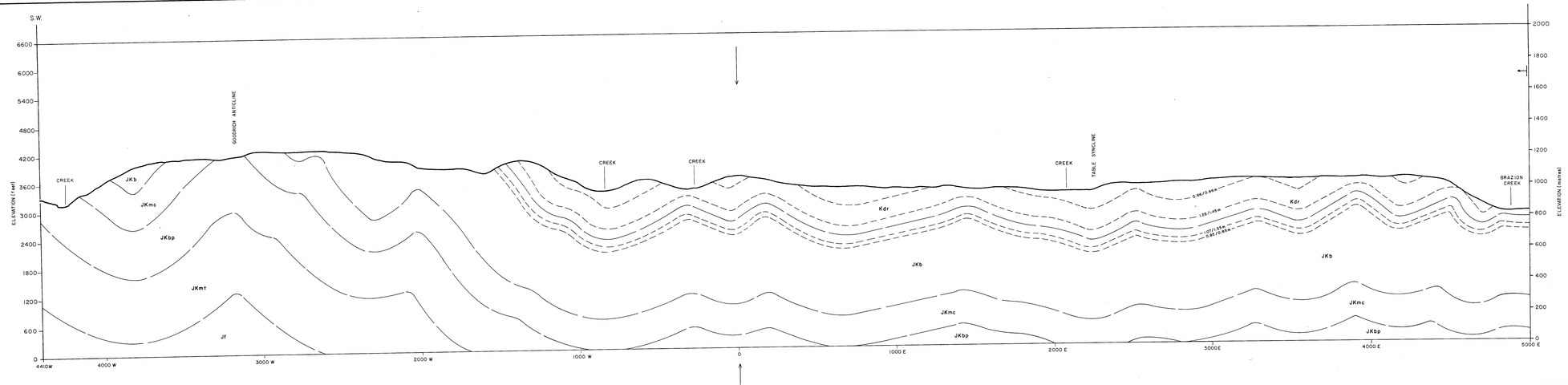

LEGEND

Appendix A

- Q — *QUATERNARY* — Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
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- Kdr — *DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
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- JKmc — *MONACH FORMATION* — Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION* — Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION* — Dark grey and black shales, mudstones, sandstones, siltstones, marine

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS

BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

- GULF LICENCE BOUNDARIES
- BASELINE LOCATION
- COAL SEAM
- GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000

METRES

Pr-Goodrich 83(2)a

GULF CANADA RESOURCES INC.

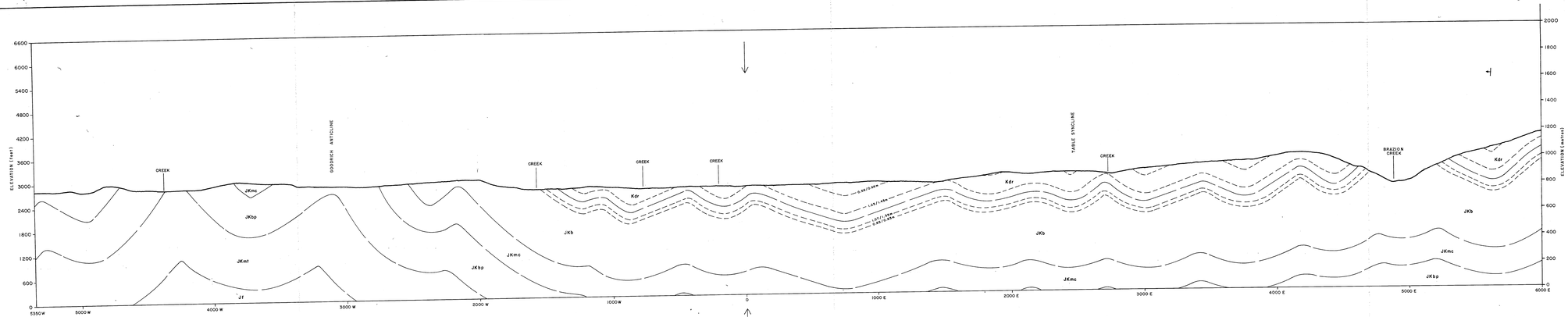
Coal Division — CALGARY — ALBERTA

534

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH - TABLE AREA
GEOLOGICAL CROSS SECTION
2000 NORTH

PREPARED BY D.I. E.S. — SCALE 1:10,000 — DRAWING No 608-83-245

APPROVED BY V.L.D. — DATE Oct 83



LEGEND

Appendix A

- Q — QUATERNARY
  Glacial deposits & alluvium
- Kcm — COMMOTION FORMATION
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — MOOSEBAR FORMATION
  Mudstones, minor siltstones, marine
- Kbs — BLUESKY
  Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — GETHING FORMATION
  Cyclothems ; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit ; COAL
- Kdr — DRESSER FORMATION
  Incomplete cyclothems ; discontinuous coal measures in varying thicknesses ; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — BRENOT FORMATION
  Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONACH FORMATION
  Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — BEATTIE PEAKS FORMATION
  Buff to brownish sandstones, fine to medium grained ; thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — MONTEITH FORMATION
  Grey and brown sandstones, fine to medium grained, fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — FERNIE FORMATION
  Dark grey and black shales, mudstones, sandstones, siltstones, marine

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS — BEAVERTTE GROUP — CRASSIER GROUP — FORT ST. JOHN

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000
METRES

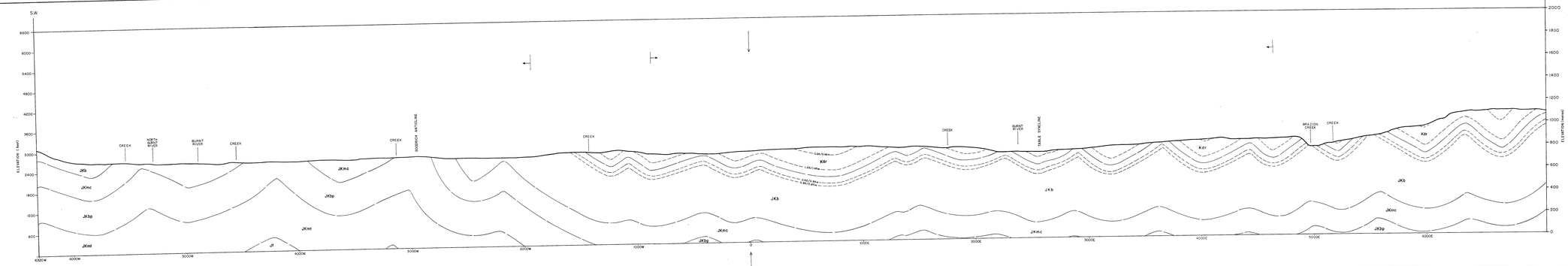
Pg-Crossech 83(2)e

534

GULF CANADA RESOURCES INC.
CALGARY — Coal Division — ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
1000 NORTH

PREPARED BY: G.J. E.S. — SCALE 1:10,000
APPROVED BY: V.L.D. — DATE OCT. 83 — DRAWING No. 534-83-24



LEGEND

Appendix A

- Q — QUATERNARY — Glacial deposits & alluvium
- Kcm — COMMOTION FORMATION — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — MOOSEBAR FORMATION — Mudstones, minor siltstones, marine
- Kbs — BLUESKY — Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — GETHING FORMATION — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
- Kdr — DRESSER FORMATION — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — BRECKIT FORMATION — Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONACH FORMATION — Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
- JKbp — BEATTIE PEAKS FORMATION — Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with limestone banding
- JKmt — MONTEITH FORMATION — Grey and brown sandstones, fine to medium grained, fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — FERNIE FORMATION — Dark grey and black shales, mudstones, sandstones, siltstones, marine

JURASSIC — TRANSITIONAL — BEATTIE PEAKS GROUP — CRASSIER GROUP — FORT ST. JOHN — LOWER CRETACEOUS

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000 METRES

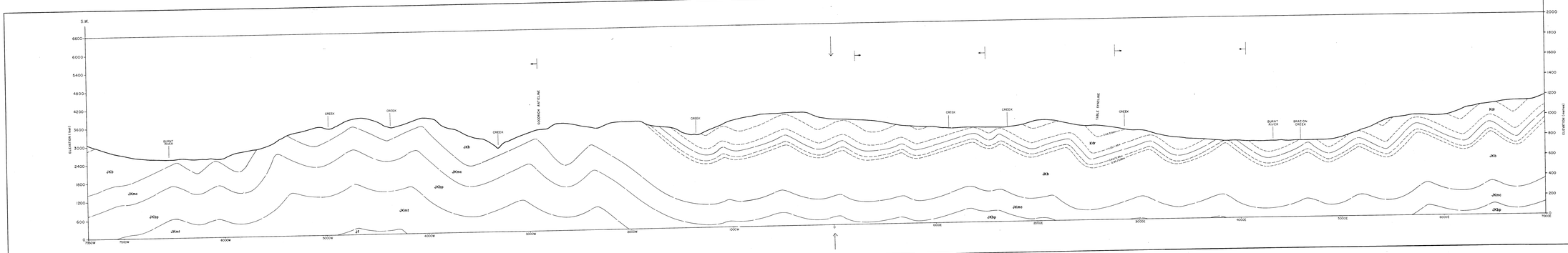
Per. Comm. R.S.G.

GULF CANADA RESOURCES INC.
Gulf Canada
CALGARY ... MARKHAM

534

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
0000 Oct 83 x11

PREPARED BY: B.L. E.S.
CONTRACTED BY: J.A.S. DATE: Oct 83 DRAWING No. 534-83-09



Appendix A

LEGEND

- Q — **QUATERNARY** — *Glacial deposits & alluvium*
- K-Im — **COMMOTION FORMATION** — *Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates*
- K-Hb — **MOOSEBAR FORMATION** — *Mudstones, minor siltstones, marine*
- K-Bl — **BLUESKY** — *Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite*
- K-gl — **GETHING FORMATION** — *Cyclothems: dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL*
- K-dr — **DRESSER FORMATION** — *Cyclothems; sandstones; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates*
- J-K-b — **BRENOT FORMATION** — *Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL*
- J-K-mc — **MONACHE FORMATION** — *Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.*
- J-K-bp — **BEATTIE PEAKS FORMATION** — *Buff to brownish sandstones; fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with primitive banding*
- J-K-mt — **MONTEITH FORMATION** — *Grey and buff sandstones, fine to medium grained, fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.*
- J-T — **FERNIE FORMATION** — *Dark grey and black shales, mudstones, sandstones, siltstones, marine*

- JURASSIC — TRANSITIONAL — CRASSIER GROUP — LOWER CRETACEOUS
- BEAVERTTE GROUP
- FORT ST. JOHN

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000 METRES

Scanned from 4

Re Geoscience Sk 9A

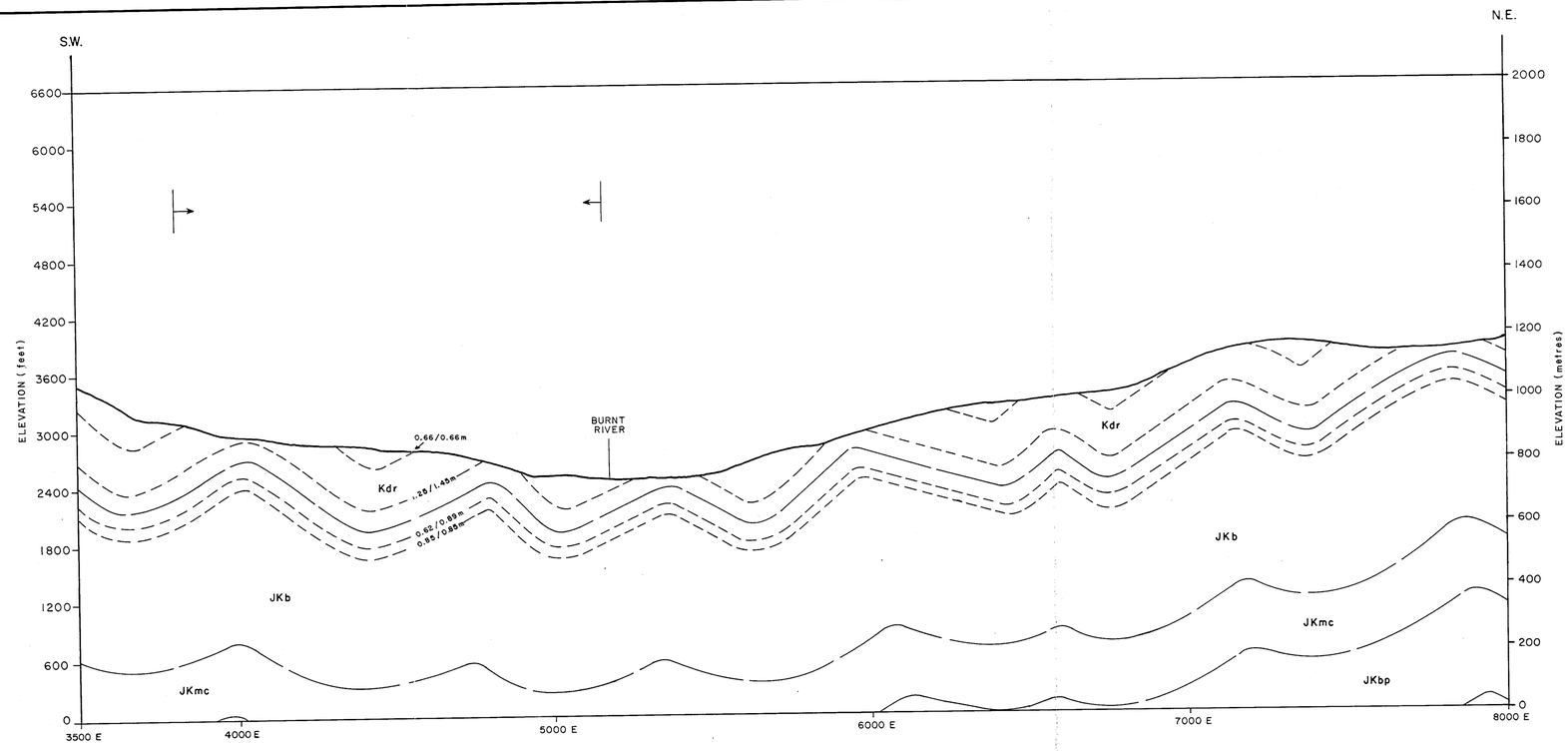
GULF CANADA RESOURCES INC.

CALGARY — ALBERTA

534

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH - TABLE AREA
GEOLOGICAL CROSS SECTION
1000 SOUTH

DESIGNED BY: D. C. B.
APPROVED BY: C. A. S.
DATE: Oct 83
DRAWING No. GSR 83-102



LEGEND

Appendix A

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS — BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

- Q — *QUATERNARY*
  Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION*
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — *MOOSEBAR FORMATION*
  Mudstones, minor siltstones, marine
- Kbs — *BLUESKY*
  Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — *GETHING FORMATION*
  Cyclothems ; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones ; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit ; COAL
- Kdr — *DRESSER FORMATION*
  Incomplete cyclothems ; discontinuous coal measures in varying thicknesses ; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — *BRENOT FORMATION*
  Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION*
  Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION*
  Buff to brownish sandstones, fine to medium grained ; thinly bedded black and dark grey shales, silty shales, siltstones ; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION*
  Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION*
  Dark grey and black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000
METRES

Pre-Goodrich 83(2)A

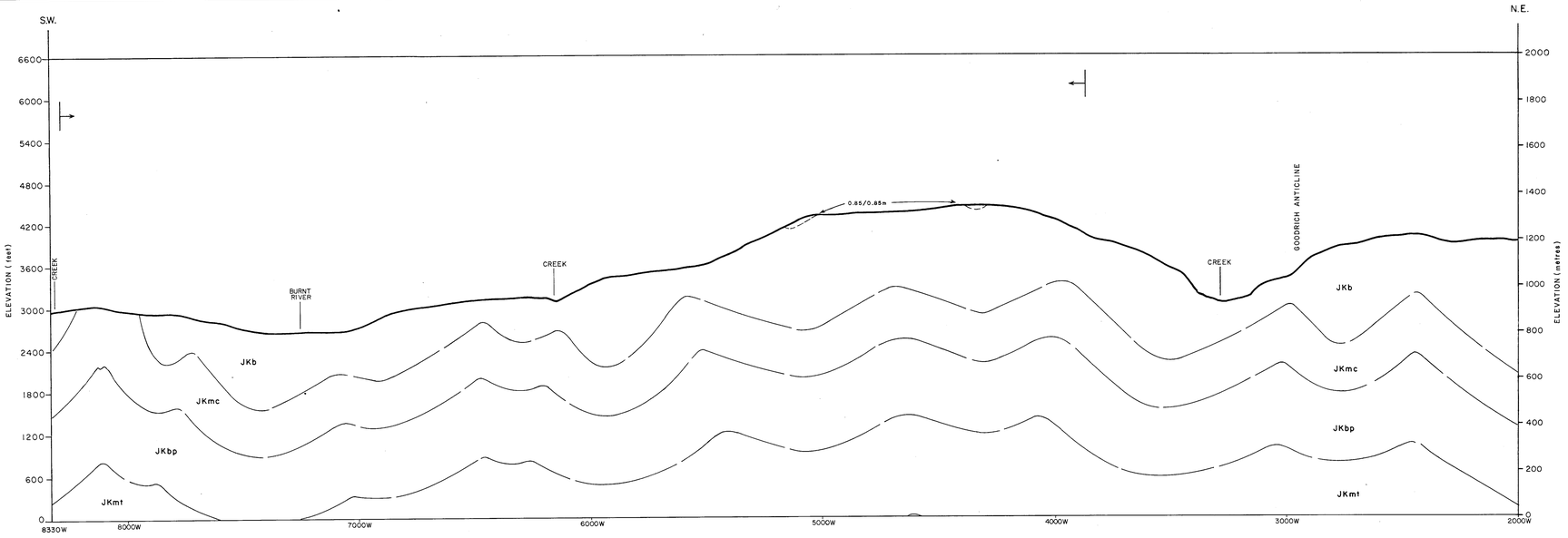
534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
2000 S (EAST)

GS 83x09

PREPARED BY:	D.I. E.S.		SCALE
APPROVED BY:	V.L.D.	DATE: Oct 83	DRAWING No. GDR-83-249



LEGEND

Appendix A

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS	Q	*QUATERNARY* — Glacial deposits & alluvium
	Kcm	*COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	*MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
	Kbs	*BLUESKY* — Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
FORT ST. JOHN — CRASSIER GROUP	Kgt	*GETHING FORMATION* — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
	Kdr	*DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
BEAUDETTE GROUP	JKb	*BRENOT FORMATION* — Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	*MONACH FORMATION* — Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, silfstones and sandstones with occasional thin conglomerates.
	JKbp	*BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
	JKmt	*MONTEITH FORMATION* — Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
	Jf	*FERNIE FORMATION* — Dark grey and black shales, mudstones, sandstones, silfstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000

METRES

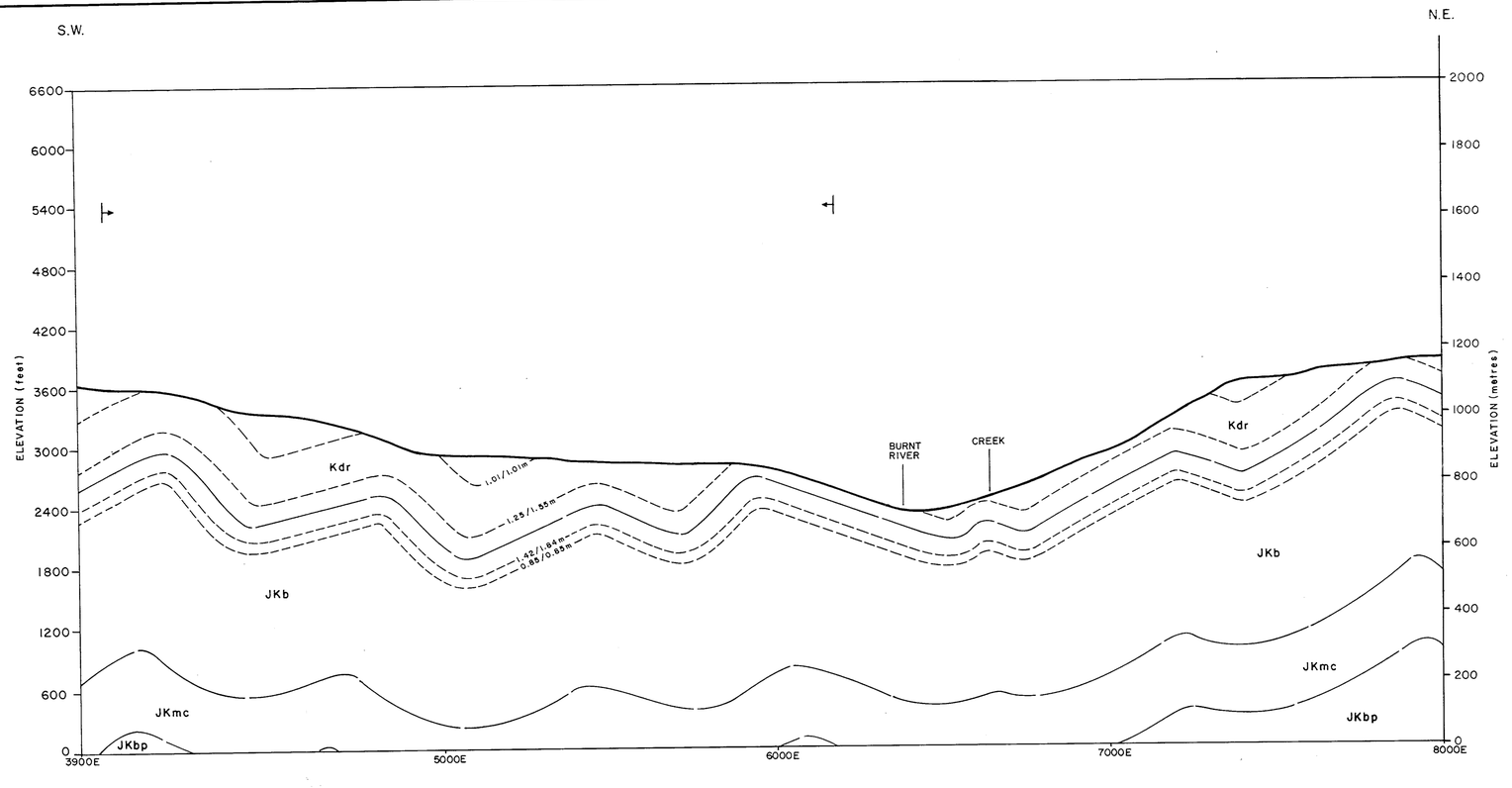
Pr- Goodrich 83(7)A

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
2000 S (WEST) 83 x 05

PREPARED BY: D.I. E.S. SCALE
APPROVED BY: V.L.D. DATE: Oct 83. DRAWING No. GDR-83-250



LEGEND

Appendix A

- Q — *QUATERNARY*
  Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION*
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — *MOOSEBAR FORMATION*
  Mudstones, minor siltstones, marine
- Kbs — *BLUESKY*
  Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — *GETHING FORMATION*
  Cyclothems ; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones ; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit ; COAL
- Kdr — *DRESSER FORMATION*
  Incomplete cyclothems ; discontinuous coal measures in varying thicknesses ; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — *BRENOT FORMATION*
  Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION*
  Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION*
  Buff to brownish sandstones, fine to medium grained ; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION*
  Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION*
  Dark grey and black shales, mudstones, sandstones, siltstones, marine

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS — BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000

METRES

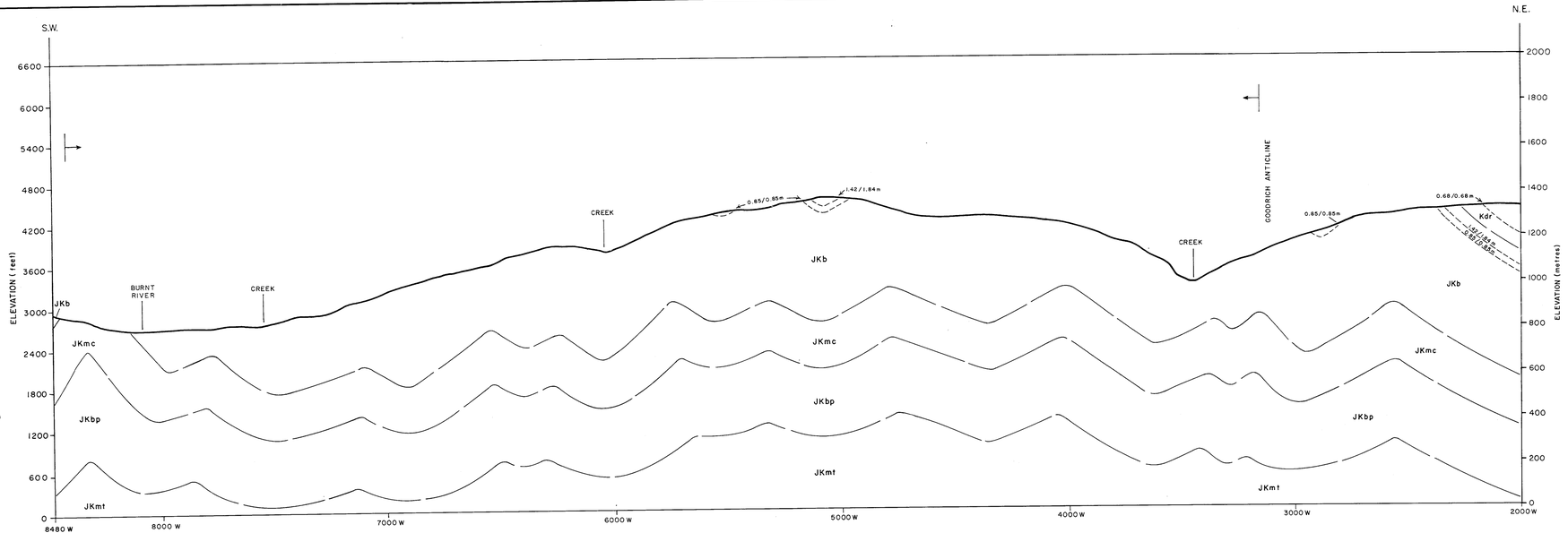
Re. Goodrich 83(2A

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
3000 S (EAST) GS 83x06

PREPARED BY: D.I. E.S. SCALE
APPROVED BY: V.L.D. DATE: Oct. 83. DRAWING No. GDR-83-251



LEGEND

Appendix A

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS — BEAUDETTE GROUP — GRASSIER GROUP — FORT ST. JOHN

- Q — *QUATERNARY*
  Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION*
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — *MOOSEBAR FORMATION*
  Mudstones, minor siltstones, marine
- Kbs — *BLUESKY*
  Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — *GETHING FORMATION*
  Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tufts in upper unit; COAL
- Kdr — *DRESSER FORMATION*
  Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — *BRENOT FORMATION*
  Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION*
  Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION*
  Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION*
  Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION*
  Dark grey and black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000

METRES

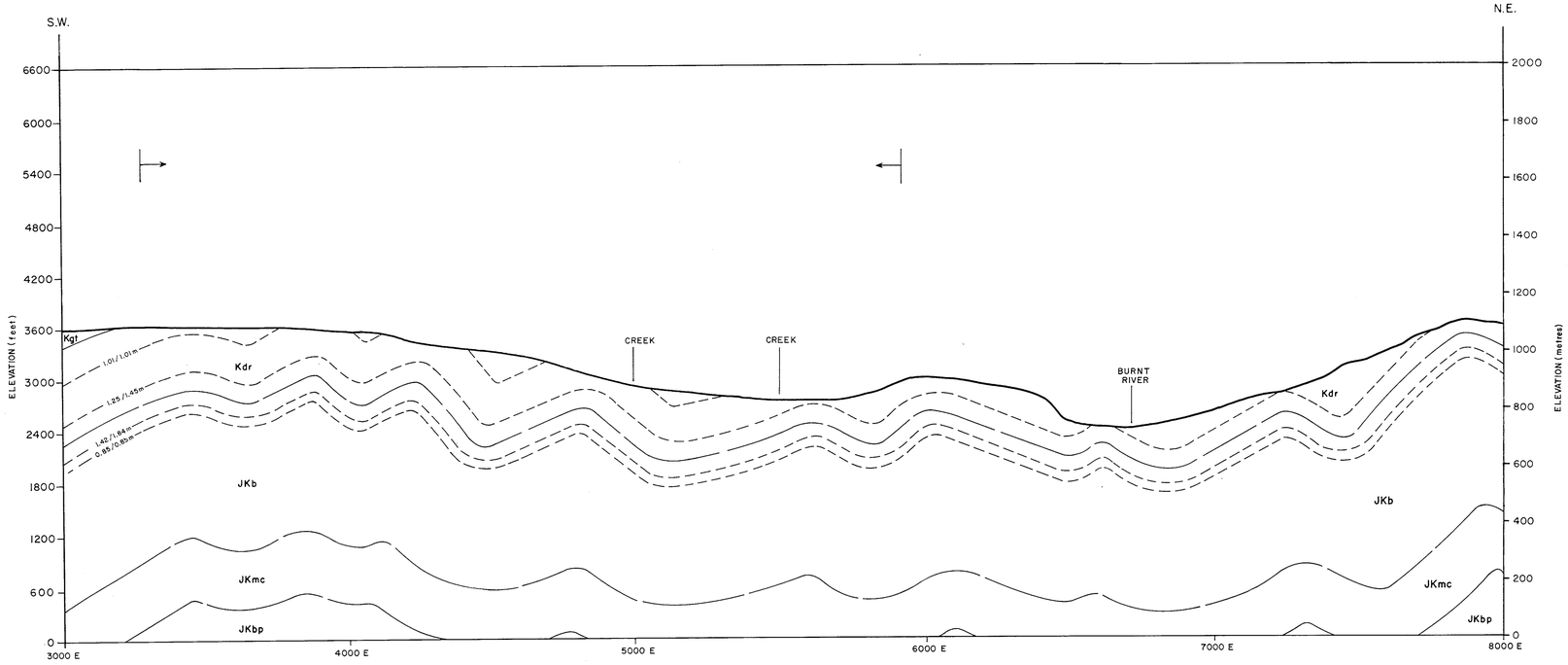
Pre-Goodrich 83/2a

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

534

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
3000 S (WEST) GS 83x07

PREPARED BY: D. I., E. S. SCALE
APPROVED BY: V. L. D. DATE: Oct. 83 DRAWING No. GDR-83-255



LEGEND

Appendix A

	Q	*QUATERNARY* — *Glacial deposits & alluvium*
LOWER CRETACEOUS — FORT ST.JOHN — CRASSIER GROUP	Kcm	*COMMOTION FORMATION* — *Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates*
	Kmb	*MOOSEBAR FORMATION* — *Mudstones, minor siltstones, marine*
	Kbs	*BLUESKY* — *Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite*
	Kgt	*GETHING FORMATION* — *Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL*
	Kdr	*DRESSER FORMATION* — *Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates*
TRANSITIONAL — BEAUDETTE GROUP	JKb	*BRENOT FORMATION* — *Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL*
	JKmc	*MONACH FORMATION* — *Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.*
	JKbp	*BEATTIE PEAKS FORMATION* — *Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding*
	JKmf	*MONTEITH FORMATION* — *Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.*
JURASSIC	Jf	*FERNIE FORMATION* — *Dark grey and black shales, mudstones, sandstones, siltstones, marine*

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000 METRES

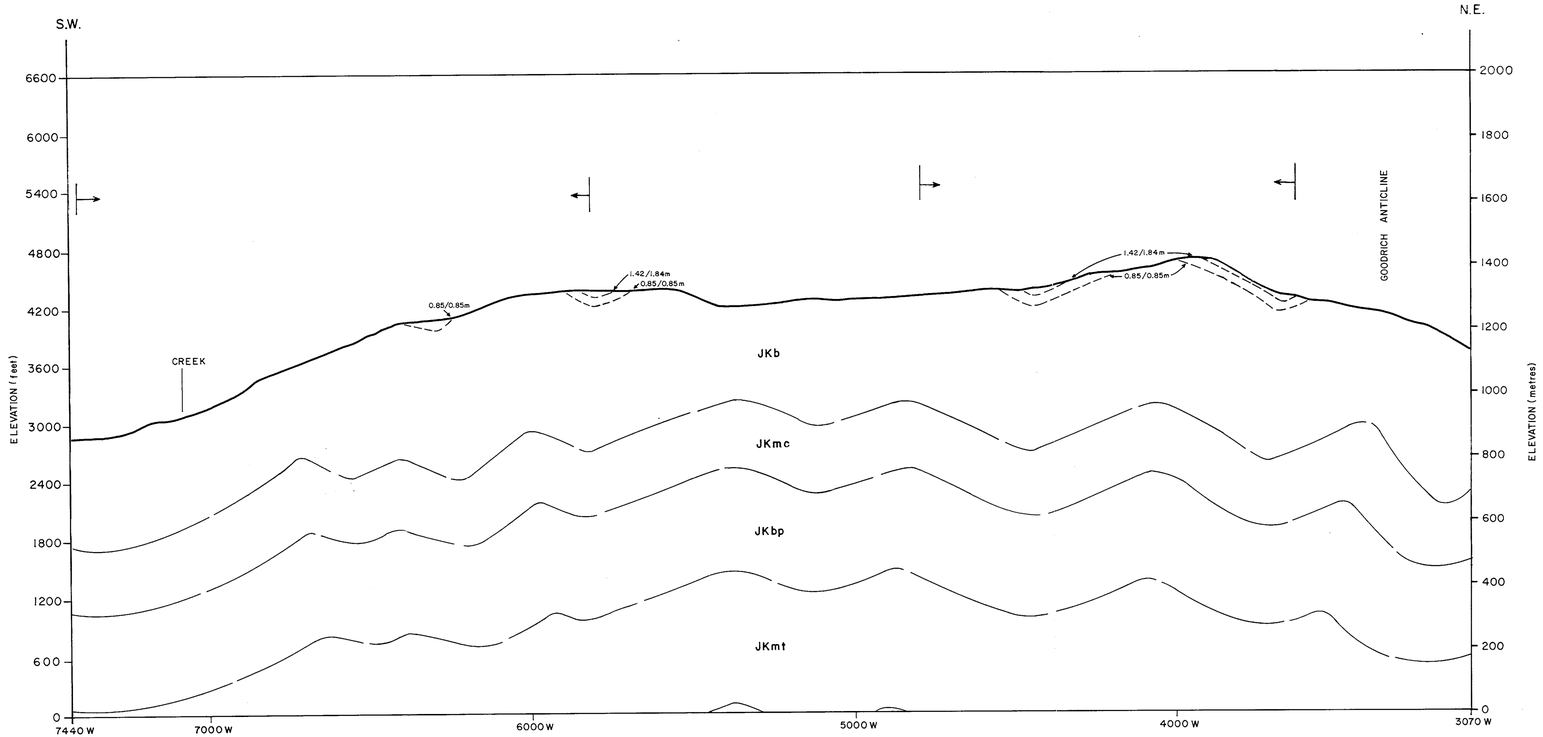
Pre-Goodrich 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

534

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
4000 S (EAST) GS83x04

PREPARED BY:	D.I. E.S.	SCALE	
APPROVED BY:	V.L.D.	DATE: Oct.83	DRAWING No. GDR-83-253



LEGEND

Appendix A

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS — BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

- Q — *QUATERNARY*
  Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION*
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — *MOOSEBAR FORMATION*
  Mudstones, minor siltstones, marine
- Kbs — *BLUESKY*
  Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — *GETHING FORMATION*
  Cyclothems ; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones ; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit ; COAL
- Kdr — *DRESSER FORMATION*
  Incomplete cyclothems ; discontinuous coal measures in varying thicknesses ; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — *BRENOT FORMATION*
  Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION*
  Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION*
  Buff to brownish sandstones, fine to medium grained ; thinly bedded black and dark grey shales, silty shales, siltstones ; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION*
  Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION*
  Dark grey and black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000

METRES

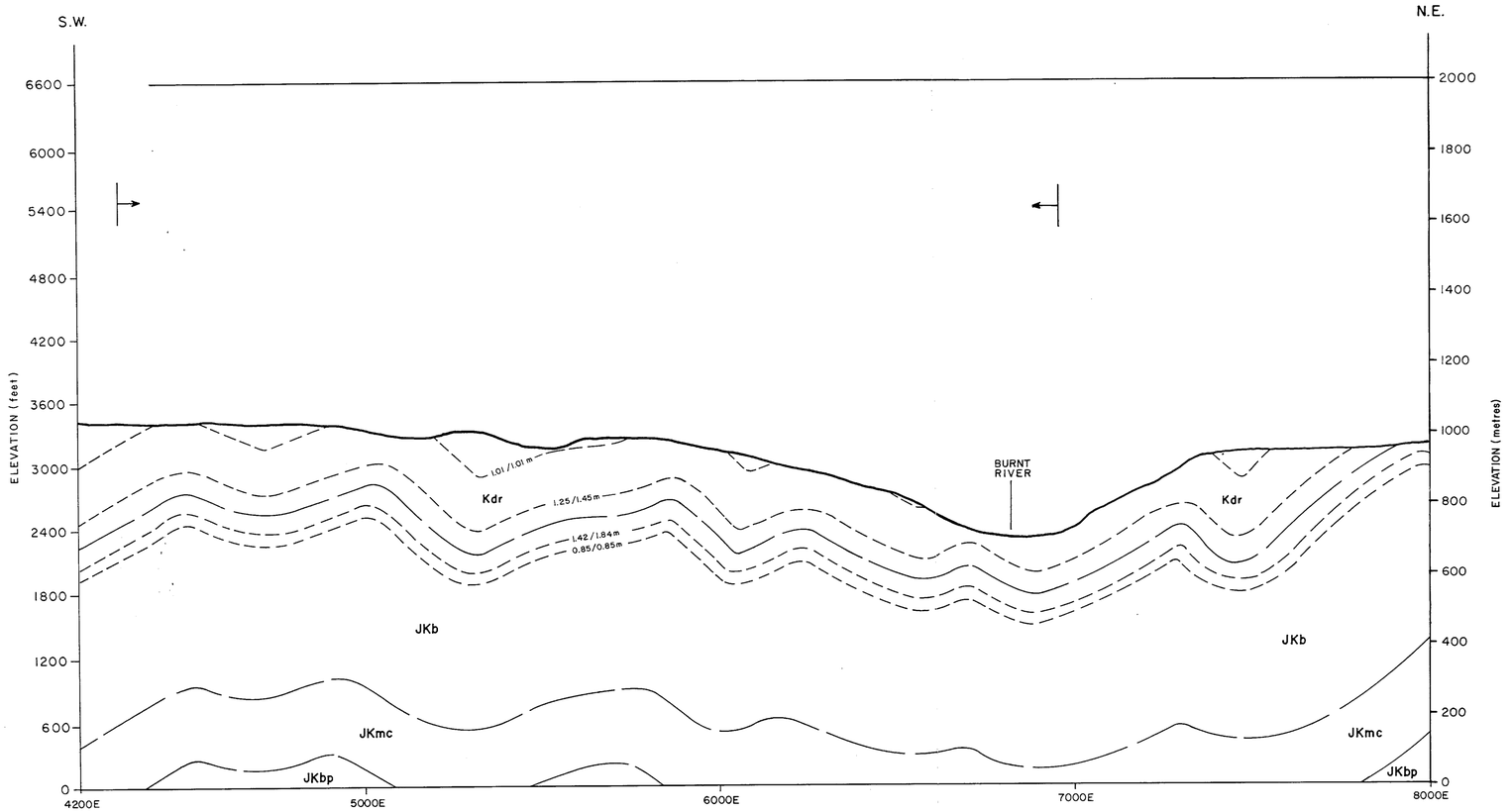
Re- Goodrich 83(2)A

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH — TABLE AREA
GEOLOGICAL CROSS SECTION
4000 S (WEST) GS 83X-

PREPARED BY:	D. I. E. S.	SCALE	
APPROVED BY:	V. L. D.	DATE: Oct. 83	DRAWING No. GDR-83-254



LEGEND

Appendix A

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS — BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN

- Q — *QUATERNARY*
  Glacial deposits & alluvium
- Kcm — *COMMOTION FORMATION*
  Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
- Kmb — *MOOSEBAR FORMATION*
  Mudstones, minor siltstones, marine
- Kbs — *BLUESKY*
  Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
- Kgt — *GETHING FORMATION*
  Cyclothems ; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones ; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit ; COAL
- Kdr — *DRESSER FORMATION*
  Incomplete cyclothems ; discontinuous coal measures in varying thicknesses ; medium to very coarse grained sandstones, grits, and conglomerates
- JKb — *BRENOT FORMATION*
  Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION*
  Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
- JKbp — *BEATTIE PEAKS FORMATION*
  Buff to brownish sandstones, fine to medium grained ; thinly bedded black and dark grey shales, silty shales, siltstones ; thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION*
  Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
- Jf — *FERNIE FORMATION*
  Dark grey and black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000

METRES

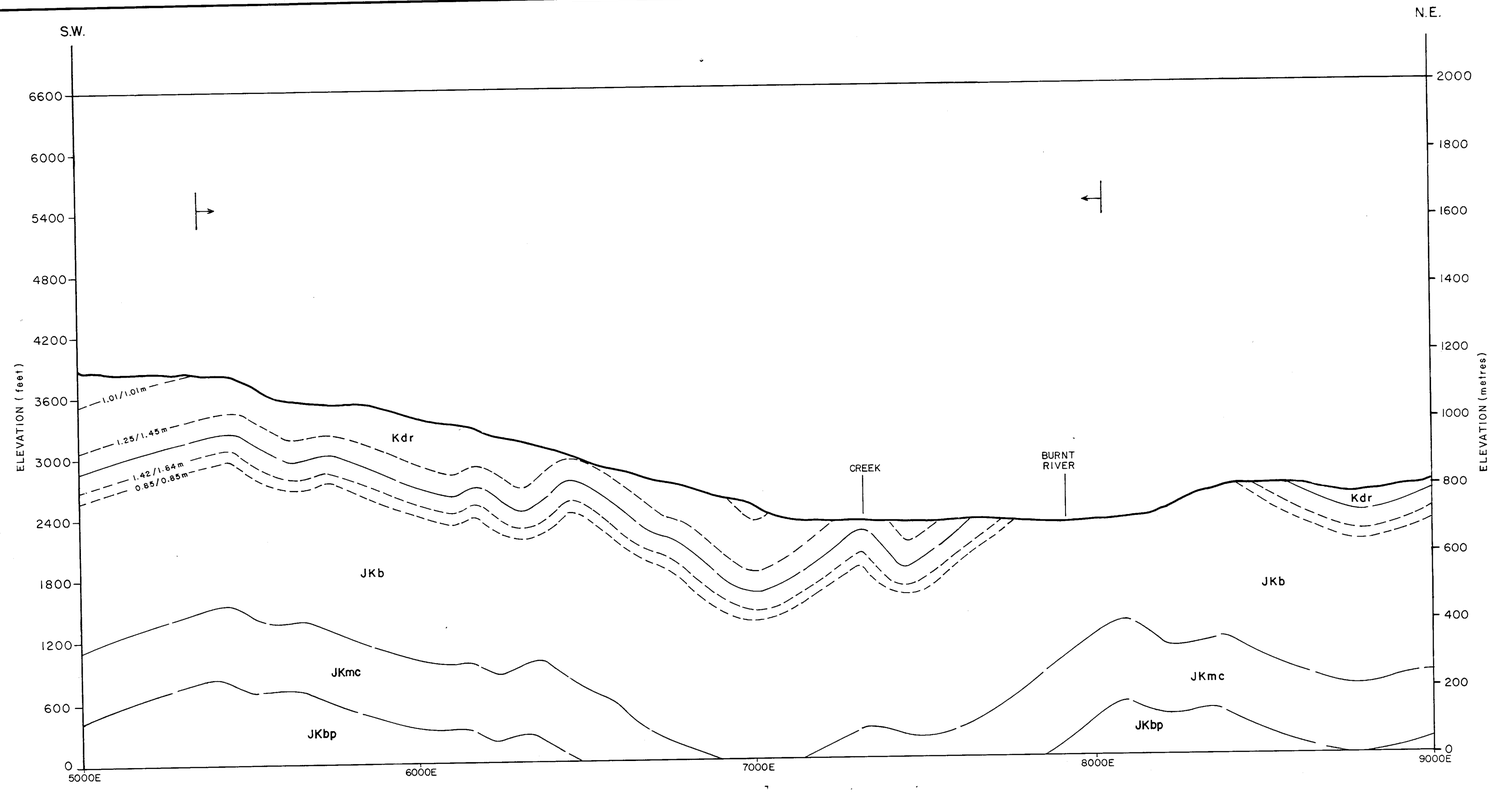
Pr-Goodrich 83(2)a

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
5000 S (EAST) GS 83x03

PREPARED BY:	D.I. E.S.	SCALE	
APPROVED BY:	V.L.D.	DATE: Oct.83	DRAWING No.GDR-83-255



LEGEND

Appendix A

	Q	*QUATERNARY* — Glacial deposits & alluvium
LOWER CRETACEOUS — TRANSITIONAL — JURASSIC / FORT ST. JOHN — CRASSIER GROUP	Kcm	*COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	*MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
	Kbs	*BLUESKY* — Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
	Kgt	*GETHING FORMATION* — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
	Kdr	*DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
BEAUDETTE GROUP	JKb	*BRENOT FORMATION* — Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	*MONACH FORMATION* — Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
	JKbp	*BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
	JKmt	*MONTEITH FORMATION* — Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
	Jf	*FERNIE FORMATION* — Dark grey and black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000 METRES

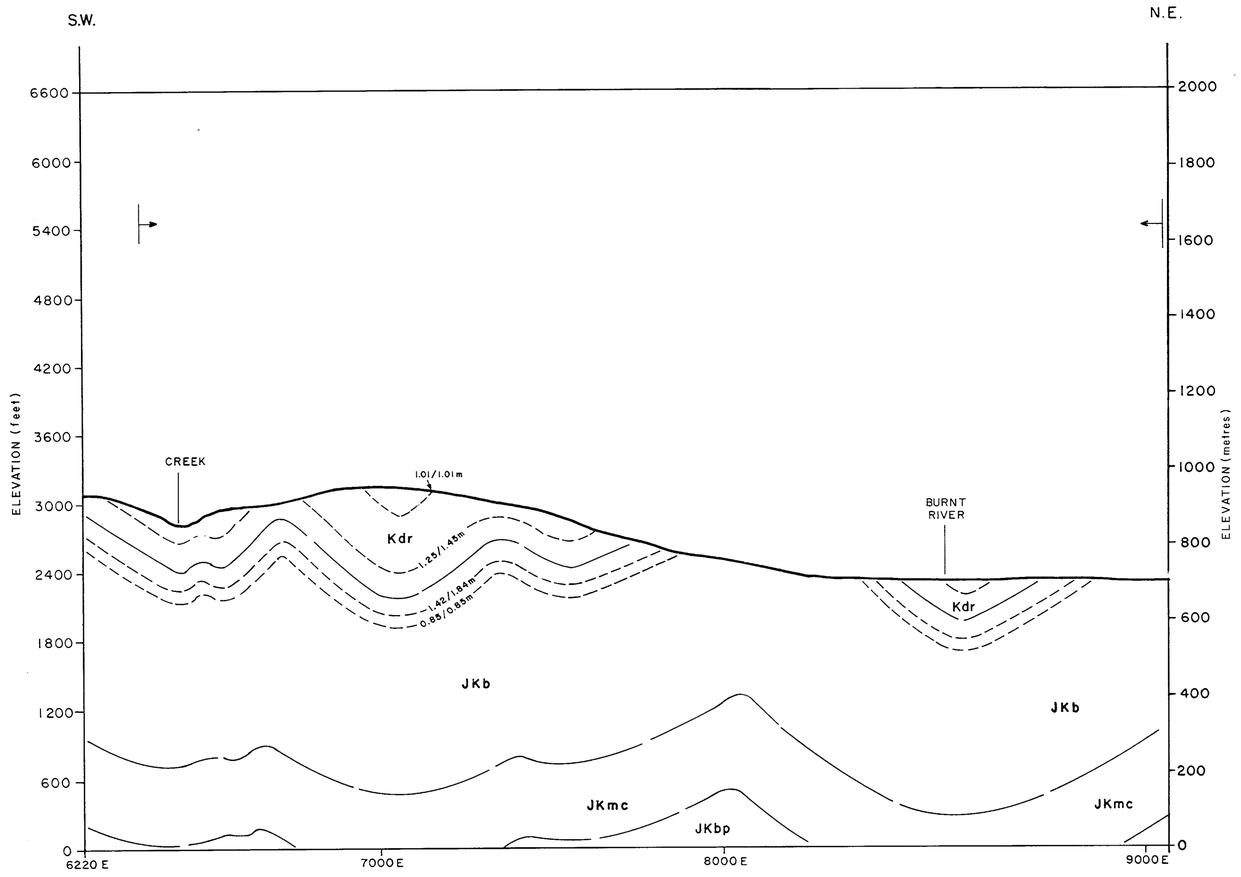
PR - GOODRICH 87.(2)A

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH-TABLE AREA
GEOLOGICAL CROSS SECTION
6000 S(EAST) GS 83302

PREPARED BY: D.I. E.S.	SCALE
APPROVED BY: V.L.D. DATE: Oct. 83.	DRAWING No. GDR-83-256



LEGEND

Appendix A

JURASSIC — TRANSITIONAL — LOWER CRETACEOUS

FORT ST. JOHN — CRASSIER GROUP — BEAUDETTE GROUP

Q	*QUATERNARY* — Glacial deposits & alluvium
Kcm	*COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
Kmb	*MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
Kbs	*BLUESKY* — Fine to medium grained sandstones, mudstones, thin conglomerate unit at top with or without glauconite
Kgt	*GETHING FORMATION* — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
Kdr	*DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits, and conglomerates
JKb	*BRENOT FORMATION* — Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
JKmc	*MONACH FORMATION* — Marine lithic and quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates.
JKbp	*BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
JKmt	*MONTEITH FORMATION* — Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates.
Jf	*FERNIE FORMATION* — Dark grey and black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

COAL SEAM

GEOLOGICAL CONTACT

SCALE 1:10,000

0 500 1000

METRES

Pre-Goodrich 83(2)a

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
1983
GOODRICH SOUTH – TABLE AREA
GEOLOGICAL CROSS SECTION
7000 S (EAST) GS 83x01

PREPARED BY:	D.I. E.S.	SCALE	
APPROVED BY:	V.L.D	DATE: Oct. 83	DRAWING No. GDR-83-257

121°45'00" 55°20' 121°37'30" 55°20'

JKb

700 (EAST)

3400 32 31 3000 4400 2500 Gas Pipeline 30

Gas Plant Gas

29 28 3000 2400 4100 2800 27 3000 2300 26 3200 Creek

25 24 2500 4300 Skeeter Ck

55°15' 121°45'00" 55°15' 121°37'30"

TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
UP. CRET.	Kcr	CRUISER FORMATION Mudstone, siltstone
LOWER CRETACEOUS / FORT ST. JOHN GROUP	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite; mudstones, thin conglomerate unit at top
	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
CRASSIER GROUP	Kdr	DRESSER FORMATION Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
TRANSITIONAL / BEAUDETTE GROUP	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
JURASSIC	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, aporox. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- A A' Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES
- DEPRESSION FORM LINE
- SPOT HEIGHT x 1134
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 1 MILE

0 100 200 400 600 800 1000 METERS

SCALE : 1:10,000

123°00' 122°30' 56°00' 55°45' 122°00' 121°30' 55°30' 55°15' 55°00'

534 GOODRICH INDEX MAP

Appendix A

P.R. GOODRICH 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

93P/5EB

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
GOODRICH SOUTH TABLE AREA

GSSB601

PREPARED BY: E.S., M.J.M., R.I.	SCALE 1:10 000
APPROVED BY: V.L.D. DATE: NOV. 83	DRAWING No.GDR-83-258

121°52'30" 55°20' 121°45'00" 55°20'

55°15' 121°52'30" 55°15' 121°45'00"

Kdr Kgt JKb JKb(u) Kcd

Rocky Mount Jilg

3000 S (EAST) 4000 S (EAST) 5000 S (EAST) 6000 S (EAST) 7000 S (EAST)

3500 3900 3700 4000 4300 4900 5000 4300 3400 3100 3600 4500

30 31 32 28 27 26 25 24

GDR-85-TRC-85040 0.30/0.50m 0.65/1.10m

GDR-85-TRC-83005 1.54/1.78m

GDR-85-TRC-83001 2.68/2.96m

GDR-85-TRC-82050 4.42/5.42m

TABLE OF FORMATIONS

UP. CRET.	Q	QUATERNARY Glacial deposits and alluvium
LOWER CRETACEOUS / FORT ST. JOHN GROUP	Kcr	CRUISER FORMATION Mudstone, siltstone
	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
CRASSIER GROUP	Kdr	DRESSER FORMATION Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
TRANSITIONAL / BEAUDETTE GROUP	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
JURASSIC-	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

LEGEND

RIVER
STREAM
LAKE
SAND
TREE LINE
FORM LINES 1150 1100
DEPRESSION FORM LINE
SPOT HEIGHT x 1134
MAIN ROAD
SECONDARY ROAD
TRACK
TRAIL
CUT LINE
RAILROAD
BUILDING
COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 1 MILE

0 100 200 400 600 800 1000 METERS

SCALE : 1:10,000

123°00' 122°30' 55°00' 55°45' 122°00' 121°30' 55°30' 55°15'

93P/15W 93P/15E 93P/16W 93P/10W 93P/10E 93P/9W 93P/9E 93P/8W 93P/8E 93P/7W 93P/7E 93P/6W 93P/6E 93P/5W 93P/5E 93P/4W 93P/4E

GOODRICH INDEX MAP

534

Pre-Goodrich 83(2)A

Appendix A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

93P/5WC

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
GOODRICH SOUTH TABLE AREA

PREPARED BY: E.S., M.J.M., R.I.	SCALE 1:10 000
APPROVED BY: V.L.D. DATE: NOV. 83	DRAWING No. GDR-83-259

122°00'00"
55°20'
121°52'30"
55°20'
55°15'
122°00'00"
55°15'
121°52'30"

TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
UPPER CRETACEOUS — FORT ST. JOHN GROUP	Kcr	CRUISER FORMATION Mudstone, siltstone
	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
LOWER CRETACEOUS — CRASSIER GROUP	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
	Kdr	DRESSER FORMATION Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
JURASSIC — TRANSITIONAL — BEAUDETTE GROUP	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- A — A' Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES (1600, 1700)
- DEPRESSION FORM LINE
- SPOT HEIGHT (× 1134)
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 1 MILE

0 100 200 400 600 800 1000 METERS

SCALE : 1:10,000

123°00' 122°30' 56°00' 55°45' 122°00' 121°30' 55°30' 55°15' 55°00'

930/15W 930/15E 930/16W 930/16E 930/9W 930/9E 930/8W 930/8E 930/1W 930/1E 930/2W 930/2E

534 GOODRICH INDEX MAP

Appendix A

FR - GOODRICH 8(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

93P/5WD

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
GOODRICH SOUTH TABLE AREA

PREPARED BY: E.S., M.J.M., R.I.	SCALE 1:10 000
APPROVED BY: V.L.D. DATE: NOV. 83	DRAWING No.GDR-83-260

122°00'00"
55°25'
121°52'30"
55°25'
55°20'
122°00'00"
55°20'
121°52'30"

Mina
BRAZION
CREEK
TABLE SYNCLINE
BASE LINE
3800
4000
4100
3400
3200
3000
3500
3900
4500
5000
3100
Kdr
Kgt
JKb
64
65
66
67
68
69
70
71
6000 N
5000 N
4000 N
3000 N
2000 N
1000 N
1000 S
0000

TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium	
UP. CRET.	Kcr	CRUISER FORMATION Mudstone, siltstone	
LOWER CRETACEOUS	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone	FORT ST. JOHN GROUP
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone	
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates	
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine	
	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top	
	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL	
	Kdr	DRESSER FORMATION Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates	CRASSIER GROUP
	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL	
	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates	
TRANSITIONAL	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding	BEAUDETTE GROUP
	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates	
JURASSIC	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine	

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- A — A' Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

Conglomerate	Claystone/Mudstone
Sandstone	Coal
Siltstone	Silty Claystone
Quartzite	Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES (100)
- DEPRESSION FORM LINE
- SPOT HEIGHT ×1134
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 MILE

0 100 200 400 600 800 1000 METERS

SCALE 1:10,000

123°00' 122°30' 56°00' 55°45' 55°30' 55°15' 55°00'

93O/10W 93O/10E 93O/9W 93O/9E 93P/5W 93P/5E 93O/15W 93O/15E 93O/16W 93O/16E 93P/14W 93P/14E

534 GOODRICH INDEX MAP

Appendix A

PR. GOODRICH 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

93P/5WE

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
GOODRICH SOUTH TABLE AREA
GS.83.GO4

PREPARED BY: E. S., M.J.M., R.I.	SCALE 1:10 000
APPROVED BY: V.L.D. DATE: NOV. 83	DRAWING No.GDR-83-261

121°52'30"
55°25'
121°45'00"
55°25'
55°20'
121°52'30"
55°20'
121°45'00"

Blind Creek
BURNT

TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
UP. CRET.	Kcr	CRUISER FORMATION Mudstone, siltstone
FORT ST. JOHN GROUP	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
LOWER CRETACEOUS	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
	Kgt	GETHING FORMATION Cyclotherms; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
CRASSIER GROUP	Kdr	DRESSER FORMATION Incomplete cyclotherms; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
BEAUDETTE GROUP	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
TRANSITIONAL	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
JURASSIC	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location (A — A')
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES
- DEPRESSION FORM LINE
- SPOT HEIGHT (x 1234)
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE (5534)

FORM LINE INTERVAL 10 METRES

SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 MILE
0 100 200 400 600 800 1000 METERS
SCALE : 1:10,000

123°00' 122°30' 56°00' 55°45' 122°00' 121°30' 55°30' 55°15' 55°00'

534
GOODRICH
INDEX MAP

Appendix A

Fr: Goodrich 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

93P/5WF

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
GOODRICH SOUTH TABLE AREA

6383605

PREPARED BY: E.S., M.J.M., R.I.	SCALE 1:10 000
APPROVED BY: V.L.D. DATE: NOV. 83	DRAWING No. GDR-83-262

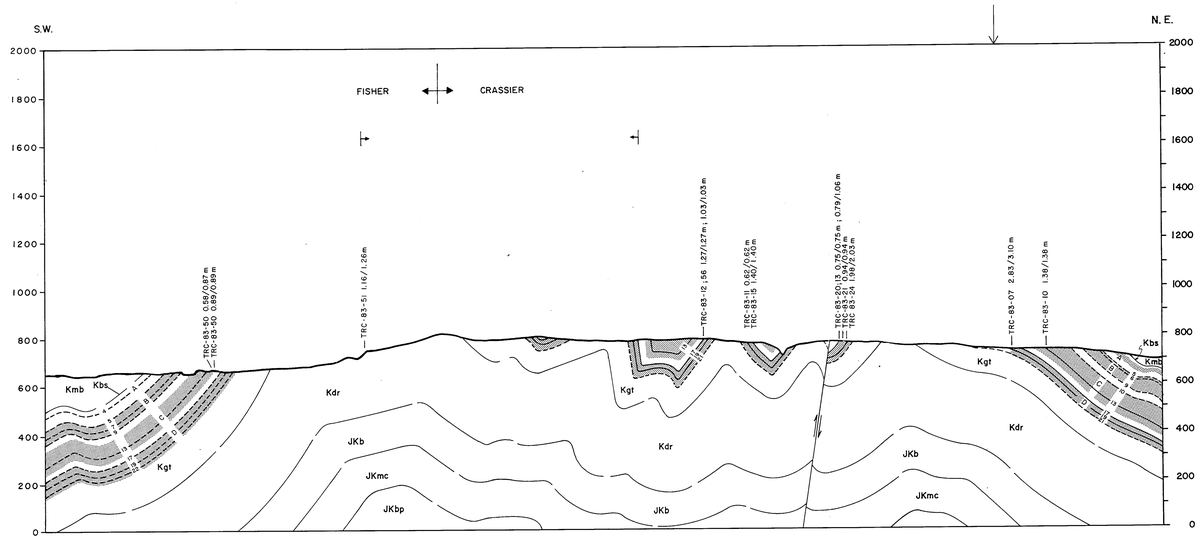
1000 S

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				38.95
B	5	TRC-83-42	5.19/7.94	
				22.48
	7	DDH-81-12	1.04/1.04	
				19.02
	9	DDH-81-12	1.47/2.12	
				28.11
C	10	TRC-83-49	0.62/0.62	
				32.52
	12	DDH-81-12	0.56/0.65	
				19.93
	13	TRC-83-31	1.11/1.43	
				11.48
	14	TRC-83-43	0.53/0.53	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				11.58
	18	TRC-83-21	0.94/0.94	
				12.56
	19	TRC-83-38	4.40/4.65	
				6.62
	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07/1.07	
				3.97
	23	TRC-83-46	0.56/0.56	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
				5.11
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				40.71
B	5	TRC-83-08	2.57/2.57	
				5.80
	6	TRC-83-06	1.15/1.15	
				29.46
	7	TRC-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.51
	13	TRC-83-10	1.38/1.38	
				20.53
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.26
D	17	TRC-83-12	1.27/1.27	
				11.58
	18	TRC-83-21	0.94/0.94	
				9.44
	19	TRC-83-24	1.98/2.03	
				17.91
	21	DDH-83-02	0.91/1.63	



UPPER CRET. / LOWER CRETACEOUS / TRANSITIONAL / JURASSIC

FORT ST. JOHN GROUP / CRASSIER GROUP / BEAUDETTE GROUP

LEGEND

- Q — *QUATERNARY* — *Glacial deposits & alluvium*
- Kcr — *CRUISER FORMATION* — *Mudstone, siltstone*
- Kgd — *GOODRICH FORMATION* — *Sandstone, minor conglomerate, siltstone, mudstone*
- Kha — *HASLER FORMATION* — *Mudstone, siltstone, thin sandstone*
- Kcm — *COMMOTION FORMATION* — *Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates*
- Kmb — *MOOSEBAR FORMATION* — *Mudstones, minor siltstones, marine*
- Kbs — *BLUESKY* — *Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.*
- Kgt — *GETHING FORMATION* — *Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit; COAL*
- Kdr — *DRESSER FORMATION* — *Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates*
- JKb — *BRENOT FORMATION* — *Lithic salt & pepper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL*
- JKmc — *MONACH FORMATION* — *Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates*
- JKbp — *BEATTIE PEAKS FORMATION* — *Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding*
- JKmt — *MONTEITH FORMATION* — *Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates*
- Jf — *FERNIE FORMATION* — *Dark grey & black shales, mudstones, sandstones, siltstones, marine*

- *GULF LICENCE BOUNDARIES*
- *BASELINE LOCATION*
- *GEOLOGICAL CONTACT*
- *FAULT*
- *COAL SEAM* — *INTERSECTION/EXPOSURE, PROJECTED*

SCALE 1:10,000

METRES 0 100 200 400 600 800 1000

Appendix A

534

Pg - Goodrich 83(A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
1000 S (83x01)

PREPARED BY: E.S., B.C., R.I., M.J.M. — SCALE 1:10,000
APPROVED BY: V. DUFORD — DATE: OCT./83 — DRAWING No. GDR-83-263

[205,571]830998002.XS

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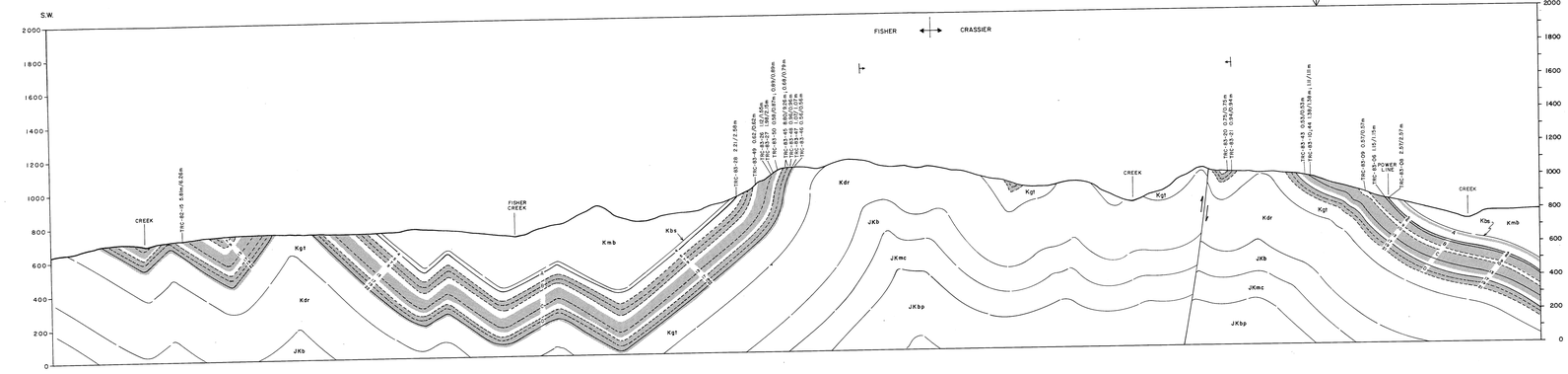
FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				38.95
B	5	TRC-83-42	5.19/7.94	22.48
	7	DDH-81-12	1.04/1.04	19.02
	9	DDH-81-12	1.47/2.12	
				28.11
C	10	TRC-83-49	0.62/0.62	32.52
	12	DDH-81-12	0.56/0.65	19.93
	13	TRC-83-31	1.11/1.43	11.48
	14	TRC-83-43	0.53/0.53	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	11.58
	18	TRC-83-21	0.94/0.94	12.56
	19	TRC-83-38	4.40/4.65	6.62
	20	TRC-83-45	0.68/0.79	8.18
	21	TRC-83-48	0.96/0.96	3.19
	22	TRC-83-47	1.07/1.07	3.97
	23	TRC-83-46	0.56/0.56	

CRASSIER
GETHING FORMATION

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	6.25
	3	DDH-83-01	0.60/0.60	5.72
	4	DDH-83-01	0.72/0.87	
				40.71
B	5	TRC-83-08	2.57/2.57	5.80
	6	TRC-83-06	1.15/1.15	29.46
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	61.51
	13	TRC-83-44	1.11/1.11	10.75
	14	TRC-83-43	0.53/0.53	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	11.58
	18	TRC-83-21	0.94/0.94	9.44
	19	TRC-83-24	1.98/2.03	17.91
	21	TRC-83-02	0.91/1.63	



LEGEND

- Q — QUATERNARY — Glacial deposits & alluvium
- Kcr — CRUISER FORMATION — Mudstone, siltstone
- Kgd — GOODRICH FORMATION — Sandstone, minor conglomerate, siltstone, mudstone
- Kha — HASLER FORMATION — Mudstone, siltstone, thin sandstone
- Kcm — COMMOTION FORMATION — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — MOOSEBAR FORMATION — Mudstone, minor siltstones, marine
- Kbs — BLUESKY — Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- Kgt — GETHING FORMATION — Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL
- Kdr — DRESSER FORMATION — Incompete cyclothems, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits & conglomerates
- JKb — BRENOT FORMATION — Lithic salt & pepper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONACH FORMATION — Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — BEATTIE PEAKS FORMATION — Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — MONTEITH FORMATION — Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — FERNIE FORMATION — Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM — INTERSECTION/EXPOSURE, PROJECTED

SCALE 1: 10,000

Appendix A

534

Re. Exhibit 85(a)

GULF CANADA RESOURCES INC.
CALGARY — Coal Division — ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
0000 N

PREPARED BY: E.S., B.E., R.L., W.J.M. — SCALE 1:10,000
APPROVED BY: K. DUFFARD — DATE OCT./83 — DRAWING No. 529-83-244

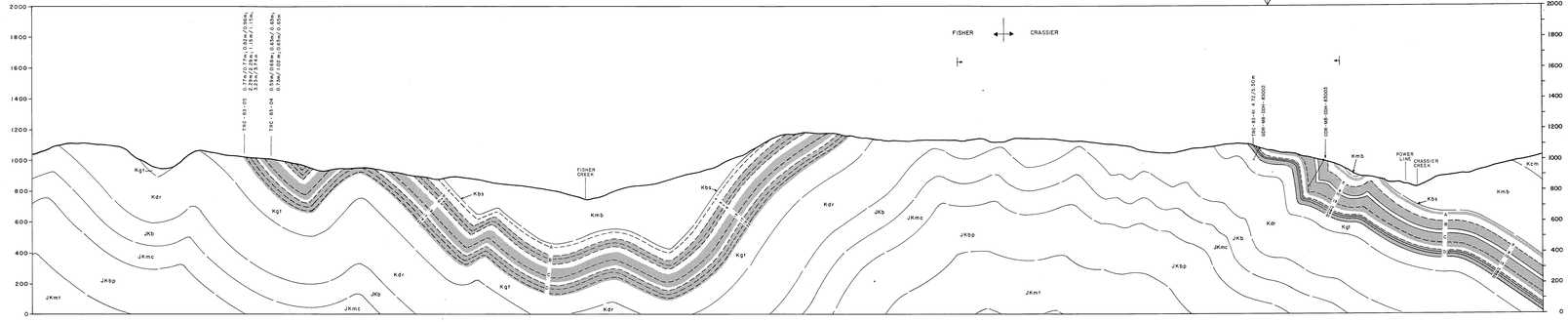
1000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				38.95
	5	TRC-83-42	5.19/7.94	
				22.48
B	7	DDH-81-12	1.04/1.04	
				19.02
	9	DDH-81-12	1.47/2.12	
				28.11
	10	TRC-83-49	0.62/0.62	
				32.52
	12	DDH-81-12	0.56/0.65	
				19.93
C	13	TRC-83-31	1.11/1.43	
				11.48
	14	TRC-83-43	0.53/0.53	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
	17	TRC-83-56	1.03/1.03	
				11.58
	18	TRC-83-21	0.94/0.94	
				12.56
	19	TRC-83-38	4.40/4.65	
				6.62
D	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07/1.07	
				3.97
	23	TRC-83-46	0.56/0.56	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
				6.25
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	
				37.14
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
	10	DDH-83-03	1.07/1.07	
				61.51
	13	TRC-83-10	1.11/1.11	
				10.75
C	14	TRC-83-43	0.53/0.53	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
	17	TRC-83-56	1.03/1.03	
				9.98
	18	DDH-83-03	1.91/2.54	
				7.89
D	19	DDH-83-02	3.08/3.58	
				13.74
	21	DDH-83-02	0.91/1.63	



LEGEND

Q	QUATERNARY	Glacial deposits & alluvium
Kcr	CRUISER FORMATION	Mudstone, siltstone
Kgd	GOODRICH FORMATION	Sandstone, minor conglomerate, siltstone, mudstone
Kha	HASLER FORMATION	Mudstone, siltstone, thin sandstone
Kcm	COMMOTION FORMATION	Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
Kmb	MOOSEBAR FORMATION	Mudstones, minor siltstones, marine
Kbs	BLUESKY	Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
Kgt	GETHING FORMATION	Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL
Kdr	DRESSER FORMATION	Incomplete cyclothems, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits & conglomerates
JKb	BRENOT FORMATION	Lithic tuff & pepper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
JKmc	MONACH FORMATION	Marine lithic & quartrose sandstones, with thick beds of clean, coarse grained white quartrites at top Minor shales, siltstones, & sandstones with occasional thin conglomerates
JKbp	BEATTIE PEAKS FORMATION	Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
JKmt	MONTEITH FORMATION	Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
Jf	FERNIE FORMATION	Dark grey, & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM
INTERSECTION/EXPOSURE, PROJECTED

UPPER CRET. — LOWER CRETACEOUS — FORT ST. JOHN GROUP — CRASSIER GROUP — TRANSITIONAL — BEATTIE PEAKS GROUP — JURASSIC

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

Appendix A

534

Pr Section 24/82W

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH - MOBERLY
GEOLOGICAL CROSS SECTION
1000 N C.S.S. 0-3

PREPARED BY: G.B., E.C., R.L., W.J.M. DATE: 1983 Nov 30
APPROVED BY: A. DUFFIELD PLAN: GCF-183 DRAWING No: 209-83-D10

1209_1716559980002-V3

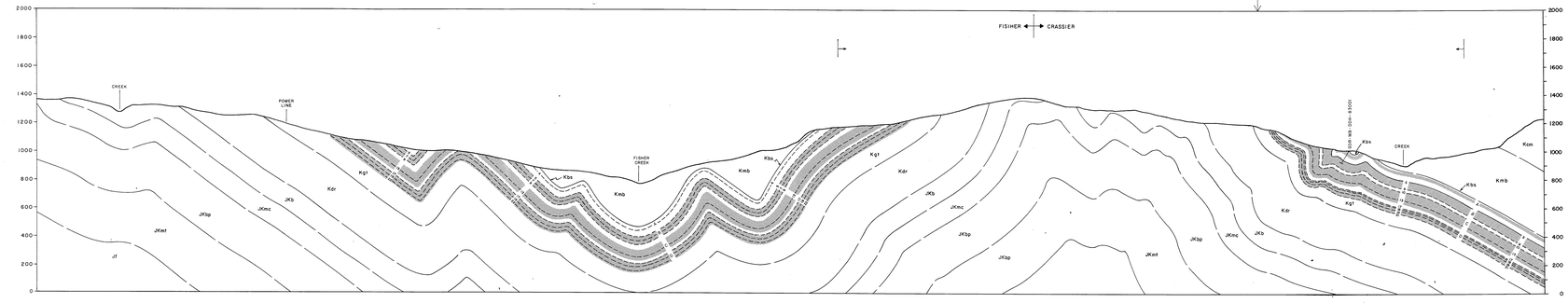
2000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				38.95
B	5	TRC-83-42	5.19/7.94	
	7	DDH-81-12	1.04/1.04	22.48
	9	DDH-81-12	1.47/2.12	19.02
				28.11
C	10	TRC-83-49	0.62/0.62	
	12	DDH-81-12	0.56/0.65	32.52
	13	TRC-83-31	1.11/1.53	19.93
	14	TRC-83-43	0.53/0.53	11.48
	15	TRC-83-50	0.58/0.87	9.25
	16	TRC-83-50	0.89/0.89	2.90
				21.50
D	17	TRC-83-56	1.03/1.03	11.58
	18	TRC-83-21	0.94/0.94	12.56
	19	TRC-83-38	4.40/4.65	6.62
	20	TRC-83-45	0.68/0.79	8.18
	21	TRC-83-48	0.96/0.96	3.19
	22	TRC-83-47	1.07/1.07	3.97
	23	TRC-83-46	0.56/0.56	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
	3	DDH-83-01	0.60/0.60	6.25
	4	DDH-83-01	0.72/0.87	5.72
				37.32
B	5	DDH-83-01	5.41/5.96	
	7	DDH-83-03	0.78/0.78	37.14
	9	DDH-83-03	1.98/1.98	11.87
				28.12
C	10	DDH-83-03	1.07/1.07	
	13	TRC-83-10	1.11/1.11	61.51
	14	TRC-83-43	0.53/0.53	10.75
	15	TRC-83-50	0.58/0.87	9.25
	16	TRC-83-50	0.89/0.89	2.90
				21.50
D	17	TRC-83-56	1.03/1.03	9.98
	18	DDH-83-02	1.91/2.54	7.89
	19	DDH-83-02	3.08/3.58	13.74
	21	DDH-83-02	0.91/1.63	



UPPER CRETACEOUS / LOWER CRETACEOUS / JURASSIC — TRANSITIONAL — FORT ST. JOHN GROUP — BULLHEAD GROUP — CRASSIER GROUP

LEGEND

- Q — QUATERNARY: Glacial deposits & alluvium
- Kgr — CRUISER FORMATION: Mudstone, siltstone
- Kgd — GOODRICH FORMATION: Sandstone, minor conglomerate, siltstone, mudstone
- Kbs — HASLER FORMATION: Mudstone, siltstone, thin sandstone
- Kcm — COMMOTION FORMATION: Siltstones, sandstones interbedding, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — MOOSEBAR FORMATION: Mudstones, minor siltstones, marine
- Kbs — BLUESKY: Fine to medium grained sandstones,with or without gilauconite, mudstones, thin conglomerate unit at top.
- Kgt — GETHING FORMATION: Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones,rooted plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL
- Kdr — DRESSER FORMATION: Incomplete cyclothems, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits & conglomerates
- JKb — BRENOT FORMATION: Lower part, dark grayer sandstones, siltstones, mudstones, carbonaceous material, COAL
- JKmc — MONACH FORMATION: Marine chert & quartzose sandstones,with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — BEATTIE PEAKS FORMATION: Buff to brownish tanstone,s fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — MONTEITH FORMATION: Grey & brown sandstones, fine to medium grained, fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — FERNIE FORMATION: Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM INTERSECTION/EXPOSURE, PROJECTED

Appendix A

534

P.S. Goodrich 85/3/A
GULF CANADA RESOURCES INC
Coal Division
CALGARY — ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
2000 N

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

PREPARED BY: E.R.B.S. R.L.M.K.
DATE: OCT./83 DRAWING No.: FIG 3.06
APPROVED BY: K. DUFORD
DRAWN: 1:10,000

1200_17 1830 PP80222.45

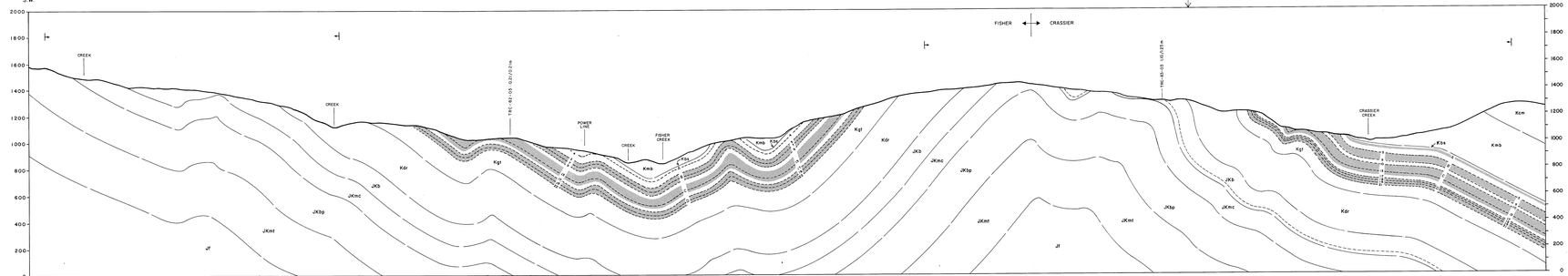
3000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				38.95
B	5	TRC-83-42	5.19/7.94	
				22.48
	7	DDH-81-12	1.04/1.04	
				19.02
	9	DDH-81-12	1.47/2.12	
				28.11
C	10	TRC-83-49	0.62/0.62	
				32.52
	12	DDH-81-12	0.56/0.65	
				19.93
	13	TRC-83-31	1.11/1.43	
				11.48
	14	TRC-83-43	0.53/0.53	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				11.58
	18	TRC-83-21	0.94/0.94	
				12.56
	19	TRC-83-45	4.40/4.65	
				6.62
	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07/1.07	
				3.97
	23	TRC-83-46	0.56/0.56	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
				6.25
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	
				37.14
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.51
	13	TRC-83-10	1.11/1.11	
				10.75
	14	TRC-83-43	0.53/0.53	
				9.25
	15	TRC-83-50	0.58/0.37	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				9.98
	18	DDH-83-02	1.91/2.54	
				7.89
	19	DDH-82-02	3.08/3.58	
				13.74
	21	DDH-83-02	0.91/1.63	



LEGEND

- Q — QUATERNARY — Glacial deposits & alluvium
- Kcr — CRUISER FORMATION — Mudstone, siltstone
- Kgd — GOODRICH FORMATION — Sandstone, minor conglomerate, siltstone, mudstone
- Khs — HASLER FORMATION — Mudstone, siltstone, thin sandstone
- Kcm — COMMOTION FORMATION — Siltstone, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — MOOSEBAR FORMATION — Mudstones, minor siltstones, marine
- Kbs — BULKLEY — Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- Kgl — GETHING FORMATION — Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional tuffs in upper unit, COAL
- Kdr — DRESSER FORMATION — Cyclic sedimentary sequence, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits & conglomerates
- JKb — BRENOT FORMATION — Lithic Salt & pepper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONACH FORMATION — Marine clinic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top, Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — BEATTIE PEAKS FORMATION — Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — MONTEITH FORMATION — Grey sandstones, fine to medium grained, fine to very coarse grained arkosic, minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — FERNIE FORMATION — Dark grey & black shales, mudstones, sandstones, siltstones, marine

- GULF LICENCE BOUNDARIES
- BASELINE LOCATION
- GEOLOGICAL CONTACT
- FAULT
- COAL SEAM INTERSECTION/EXPOSURE, PROJECTED

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

Appendix X
534

P.R. Goodrich 85/04
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1985
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
3000 N G.S.X.S.

DRAWN BY K.K.B.S. R.T.A.
CHECKED BY K. SUPINA DATE OCT.85 DRAWING No. 85-GCR-01

1285-57-X5999W000.15

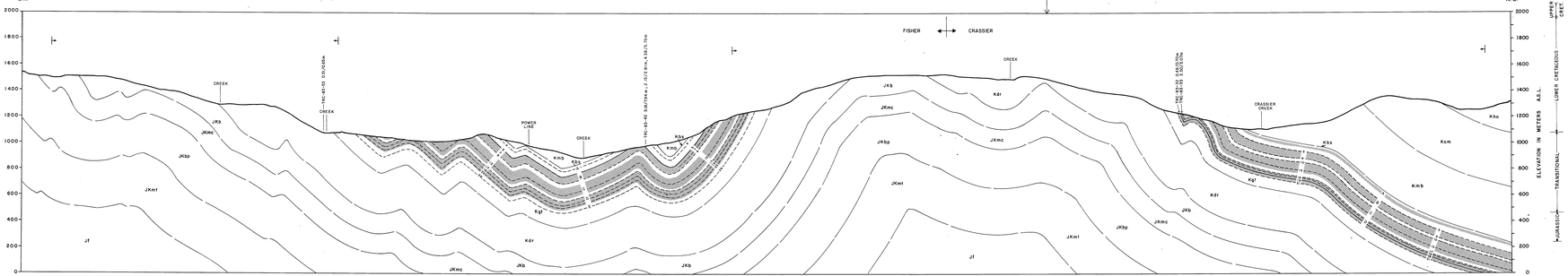
4000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				36.95
B	5	TRC-83-42	5.19/7.94	
	7	DDH-81-12	1.04/1.04	22.48
	9	DDH-81-12	1.47/2.12	19.02
				28.11
C	10	TRC-83-49	0.62/0.62	
	12	DDH-81-12	0.56/0.65	32.52
	13	TRC-83-51	1.11/1.43	19.93
	14	DDH-81-12	0.59/0.93	11.08
				35.82
D	17	DDH-81-12	0.53/0.53	11.58
	18	TRC-83-21	0.94/0.94	12.56
	19	TRC-83-38	4.40/4.65	6.62
	20	TRC-83-45	0.68/0.79	8.18
	21	TRC-83-48	0.96/0.96	3.19
	22	TRC-83-47	1.07/1.07	3.97
	23	TRC-83-46	0.56/0.56	37.78
E	26	TRC-83-34	1.80/1.85	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
	3	DDH-83-01	0.60/0.60	6.25
	4	DDH-83-01	0.72/0.87	5.72
				37.32
B	5	DDH-83-01	5.41/5.96	
	7	DDH-83-03	0.78/0.78	37.14
	9	DDH-83-03	1.98/1.98	11.87
				28.12
C	10	DDH-83-03	1.07/1.07	61.51
	13	TRC-83-10	1.11/1.11	10.75
	14	TRC-83-43	0.53/0.53	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	21.50
D	17	TRC-83-56	1.03/1.03	9.98
	18	DDH-83-02	1.91/2.54	8.40
	19	TRC-83-33	2.50/3.07	17.91
	21	DDH-83-02	0.91/1.63	



LEGEND

Q	QUATERNARY *Glacial deposits & alluvium*
Kdr	CRUISER FORMATION *Mudstone, siltstone*
Kgd	GOODRICH FORMATION *Sandstone, minor conglomerate, siltstone, mudstone*
Khs	HASLER FORMATION ? *Mudstone, siltstone, thin sandstone*
Kcm	COMMOTION FORMATION *Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates*
Kmb	MOOSEBAR FORMATION *Mudstones, minor siltstones, marine*
Kbs	BLUESKY *Fine to medium grained sandstones,with or without glauconite, mudstones,thin conglomerate unit at top.*
Kgl	GETHING FORMATION *Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional tuffs in upper unit, COAL*
Kdr	DRESSER FORMATION *Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates*
Jkb	BRENETT FORMATION *Lithic tuff & pepper sandstones, siltstones, mudstones, carbonaceous shales, minor coal*
Jkmc	MONACHE FORMATION *Marine clinic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top.Minor shales, siltstones, & sandstones with occasional thin conglomerates*
Jkbg	BEATTIE PEAKS FORMATION *Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding*
Jkmt	MONTEITH FORMATION *Grey & brown sandstones, fine to medium grained, fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates*
Jf	FERNIE FORMATION *Dark grey & black shales, mudstones, sandstones, siltstones, marine*

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM
INTERSECTION/EXPOSURE, PROJECTED

Appendix A

534

P.R. Commeau 85/2/9
GULF CANADA RESOURCES INC.
Fort Nelson
CALGARY, ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
NTS
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
4000 N

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

PREPARED BY: K.R., R.S., K.L., M.K.
APPROVED BY: R. DUFFIELD
DATE: OCT./85
DRAWING No: FOR-85-060

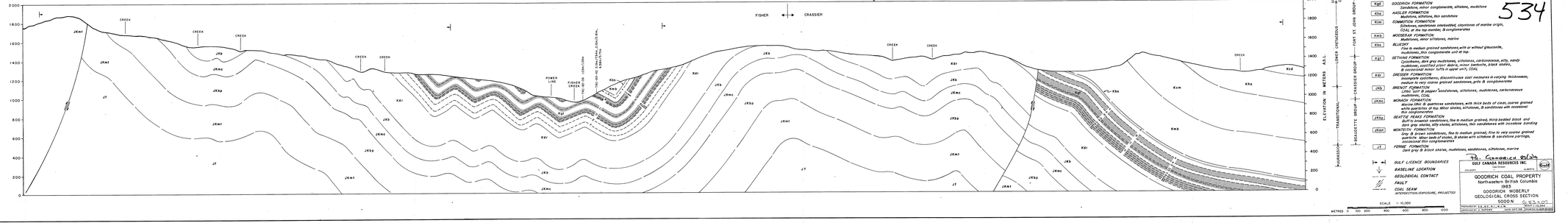
5000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				38.95
B	5	TRC-83-42	5.19/7.94	22.48
	7	DDH-81-12	1.04/1.04	
				13.68
	8	DDH-81-12	1.70/1.70	3.64
	9	DDH-81-12	1.47/2.12	
				29.11
C	12	DDH-81-12	0.56/0.65	33.14
	13	TRC-83-31	1.11/1.43	11.48
	14	DDH-81-12	0.59/0.93	
				36.05
D	17	DDH-81-12	0.53/0.53	24.57
	19	TRC-83-38	4.40/4.65	6.62
	20	TRC-83-45	0.68/0.79	6.18
	21	TRC-83-48	0.96/0.96	3.19
	22	TRC-83-47	1.07/1.07	3.97
	23	TRC-83-46	0.56/0.56	
				37.78
E	26	TRC-83-34	1.82/1.85	58.15
F	27	TRC-83-53	0.69/0.73	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	6.25
	3	DDH-83-01	0.60/0.60	5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	37.14
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	9	DDH-83-03	1.07/1.07	61.47
	13	TRC-82-01	1.15/1.15	9.53
	14	TRC-81-05	1.25/1.75	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.69/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	19.60
	19	TRC-83-33	2.50/3.07	17.91
	21	DDH-83-02	0.91/1.63	2.53
	24	TRC-83-19	1.71/1.71	18.87
	25	TRC-83-14	0.70/0.70	1.50
	26	TRC-83-18	2.32/2.57	



LEGEND

Q	QUATERNARY *Glacial deposits & alluvium*
Kcr	CRUSSER FORMATION *Mudstone, siltstone*
Kgd	GOODRICH FORMATION *Sandstone, minor conglomerate, siltstone, mudstone*
Khb	HASLER FORMATION *Mudstone, siltstone, thin sandstone*
Kcm	FORMATION FORMATION *Mudstone, siltstone, minor embedded, claystones of marine origin, COAL at the top member, & conglomerates*
Kmb	MOOSEBAR FORMATION *Mudstone, minor siltstone, marine*
Kbs	BLUESKY *Fine & medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.*
Kgt	GETHING FORMATION *Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, interbedded grey sandstones, grits & conglomerates*
Kkd	DRESSER FORMATION *Multiple cyclothems, discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates*
JKb	BRENAN FORMATION *Lithic Sand & pebble Sandstones, siltstones, mudstones, carbonaceous mudstones, COAL*
JKmc	MONACH FORMATION *Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained sandstone, minor thin, flat, silty shales, siltstones, & sandstones with occasional thin conglomerate*
JKbp	BEATTIE PEAKS FORMATION *Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shale, siltstones, thin sandstones with invertebrate banding*
JKmt	MONKTEY FORMATION *Grey & brown sandstones, thin to medium grained, fine to very coarse grained, interbedded with beds of shales, & shales with siltstone & sandstone partings, associated thin conglomerates*
JT	FERNIE FORMATION *Dark grey & black shales, mudstones, sandstones, siltstones, marine*

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM
INTERSECTION/EXPOSURE, PROJECTED

Appendix A

534

W. Goodrich 82/3/h

GULF CANADA RESOURCES INC.
CALGARY — ALBERTA
Field Division

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
5000 N

DRAWN BY: G. B. S. A.P.T.
APPROVED BY: K. R. R. L. W. K. M.
DATE: 83/3/28
DRAWING No.: 83/139 SCALE: AS SHOWN

1205.37-83/03/03.00

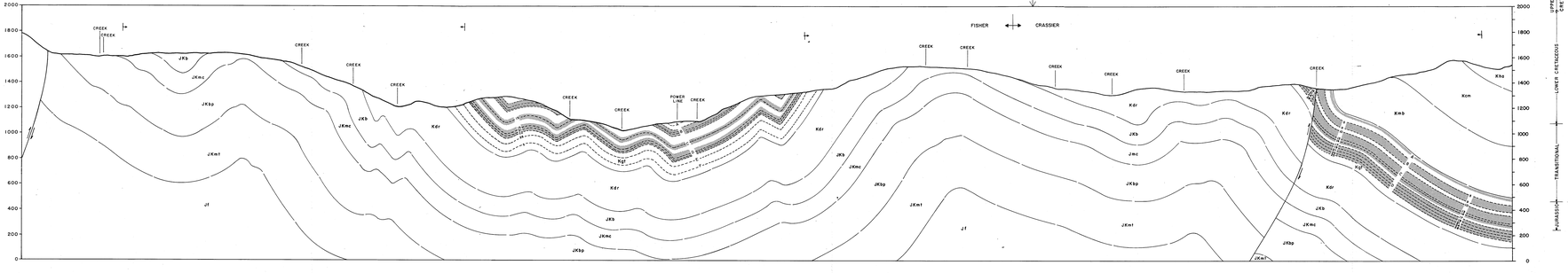
6000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				38.95
B	5	TRC-83-42	5.19/7.94	
	7	DDH-81-12	1.04/1.04	22.54
	8	DDH-81-12	1.70/1.70	13.68
	9	DDH-81-12	1.47/2.12	3.64
				61.25
C	12	DDH-81-12	0.56/0.65	
	13	TRC-83-31	1.11/1.43	19.93
	14	DDH-81-12	0.59/0.93	11.48
				36.05
D	17	DDH-81-12	0.53/0.53	
	19	TRC-83-38	4.40/4.65	24.57
	20	TRC-83-45	0.68/0.79	6.62
	21	TRC-83-48	0.96/0.96	8.18
	22	TRC-83-47	1.07/1.07	3.19
	23	TRC-83-46	0.56/0.56	3.97
				37.78
E	26	TRC-83-34	1.80/1.85	58.15
F	27	TRC-83-53	0.69/0.73	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
	3	DDH-83-01	0.60/0.60	6.25
	4	DDH-83-01	0.72/0.87	5.72
				37.32
B	5	DDH-83-01	5.41/5.96	36.41
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	28.12
C	10	DDH-83-03	1.07/1.07	61.47
	13	TRC-82-01	1.15/1.15	9.53
	14	TRC-81-05	1.25/1.75	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	21.50
D	17	TRC-83-56	1.03/1.03	19.60
	19	TRC-83-33	2.50/3.07	17.91
	21	DDH-83-02	0.91/1.63	12.53
	24	TRC-83-19	1.71/1.71	18.87
	25	TRC-83-14	0.70/0.70	1.50
	26	TRC-83-18	2.32/2.57	



LEGEND

	Q	QUATERNARY Glacial deposits & alluvium
	Kcr	CRUISER FORMATION Mudstone, siltstone
	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Sandstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones,with or without glauconite, mudstones,thin conglomerate unit at top.
	Kgt	GETHING FORMATION Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coal(thick persistent seams), minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL
	Kdr	DRESSER FORMATION Incomplete cyclothems, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits & conglomerates
	JKb	BRENOT FORMATION Dark grey mudstones, upper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	MONACH FORMATION Marine strata & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
	JKsp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained, thick-bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
	JKmt	MONTEITH FORMATION Grey & brown sandstones, fine to medium grained, fine to very coarse grained pebbly sandstones, dark grey shales with siltstone & sandstone partings, intermixed thin conglomerates
	Jf	FERNIE FORMATION Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM
INTERSECTION/EXPOSURE, PROJECTED

UPPER CRETACEOUS — LOWER CRETACEOUS — JURASSIC
FORT ST. JOHN GROUP — CRASSIER GROUP — BEATTIE PEAKS GROUP — TRANSITIONAL

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

Appendix A

534

Re Goodrich Scale

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1985
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
6000N

DRAWN BY: P.A.S. R.W.M. SCALE: 1:10,000
APPROVED BY: K. SMITH DATE: OCT./85 DRAWING NUMBER: 85-203

COPYRIGHT GULF CANADA RESOURCES INC.

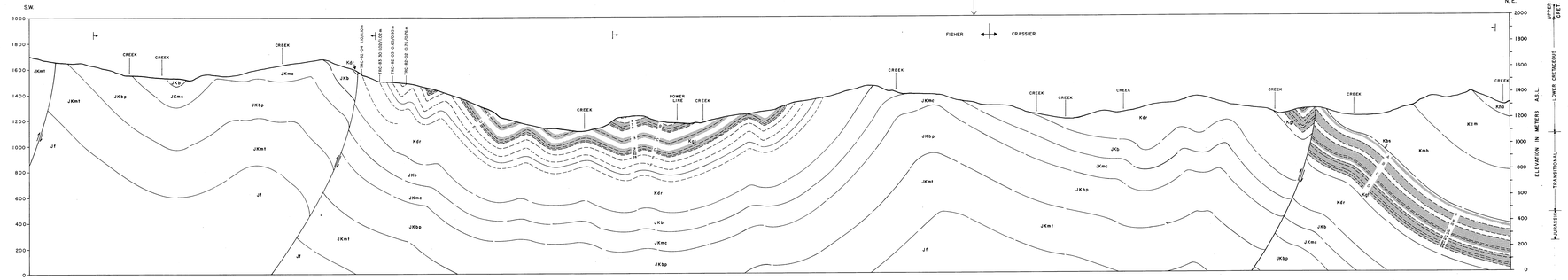
7000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				43.67
B	5	DDH-81-12	2.71/3.22	
				22.54
	7	DDH-81-12	1.04/1.04	
				13.68
	8	DDH-81-12	1.70/1.70	
				3.64
	9	DDH-81-12	1.47/2.12	
				61.25
C	12	DDH-81-12	0.56/0.65	
				19.93
	13	TRC-83-31	1.11/1.43	
				11.48
	14	DDH-81-12	0.59/0.93	
				36.05
D	17	DDH-81-12	0.53/0.53	
				24.57
	19	TRC-83-38	4.40/4.65	
				6.62
	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07/1.07	
				3.97
	23	TRC-83-46	0.56/0.56	
				37.78
E	26	TRC-83-34	1.80/1.85	
				58.15
F	27	TRC-83-53	0.69/0.73	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
				6.25
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	
				36.41
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.47
	13	TRC-82-01	1.15/1.15	
				9.53
	14	TRC-81-05	1.25/1.75	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				19.60
	19	TRC-83-33	4.12/4.39	
				17.91
	21	DDH-83-02	0.91/1.63	
				12.53
	24	TRC-83-19	1.71/1.71	
				18.87
	25	TRC-83-14	0.70/0.70	
				1.50
	26	TRC-83-18	2.32/2.57	



LEGEND

- Q — QUATERNARY: Glacial deposits & alluvium
- Kcr — CRUISER FORMATION: Mudstone, siltstone
- Kgd — GOODRICH FORMATION: Sandstone, minor conglomerate, siltstone, mudstone
- Khs — HASLER FORMATION: Mudstone, siltstone, thin sandstone
- Kcm — COMMOTION FORMATION: Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — MOOSEBAR FORMATION: Mudstones, minor siltstones, marine
- Kbs — BULKLEY: Fine to medium grained sandstones,with or without glauconite, mudstones,,thin conglomerate unit at top.
- Kgl — GETHING FORMATION: Quishenbaw, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & consolidated tuffs in upper unit, COAL
- Kdr — DRESSER FORMATION: Medium sandstones, discontinuous coal measures in varying thicknesses, medium to very coarse pebbled sandstones, grits & conglomerates
- JKb — BRENOT FORMATION: Lithic Salt & pepper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONACH FORMATION: Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top, Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKsp — BEATTIE PEAKS FORMATION: Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKm1 — MONTEITH FORMATION: Sandstones, fine to medium grained, fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — FERNIE FORMATION: Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM INTERSECTION/EXPOSURE, PROJECTED

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

Appendix A

534

P.R. Grenville, P.Geo.
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
7000 N

PREPARED BY: A.A.B.C. R.L.W.M.
APPROVED BY: P. GRENVILLE
DATE: OCT 83 DRAWING No: GR-83-C1

1200_5716559460025.45

8000 N

FISHER
GETHING FORMATION COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				43.67
B	5	DDH-81-12	2.71/3.22	
				22.48
B	7	DDH-81-12	1.04/1.04	
				13.68
B	8	DDH-81-12	1.70/1.70	
				3.64
B	9	DDH-81-12	1.47/2.12	
				61.25
C	12	DDH-81-12	0.56/0.65	
				19.93
C	13	DDH-81-12	1.03/1.08	
				11.83
C	14	DDH-81-12	0.59/0.93	
				36.05
D	17	DDH-81-12	0.53/0.53	
				24.57
D	19	TRC-83-38	4.40/4.65	
				6.62
D	20	TRC-83-45	0.68/0.79	
				8.18
D	21	TRC-83-48	0.96/0.96	
				3.19
D	22	TRC-83-47	1.07/1.07	
				3.97
D	23	TRC-83-46	0.56/0.56	
				37.78
E	26	TRC-83-34	1.80/1.85	
				58.15
F	27	TRC-83-53	0.69/0.73	

[205,57]830998003.XS

CRASSIER
GETHING FORMATION COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
				6.25
A	3	DDH-83-01	0.60/0.60	
				5.72
A	4	DDH-83-01	0.72/0.87	
				37.17
B	5	DDH-83-01	5.41/5.96	
				37.14
B	7	DDH-83-03	0.78/0.78	
				11.87
B	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.47
C	13	TRC-82-01	1.15/1.15	
				9.53
C	14	TRC-81-05	1.25/1.75	
				9.25
C	15	TRC-83-50	0.58/0.87	
				2.90
C	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				19.60
D	19	TRC-83-22	4.12/4.39	
				17.91
D	21	DDH-83-02	0.91/1.63	
				12.53
D	24	TRC-83-19	1.71/1.71	
				18.87
D	25	TRC-83-14	0.70/0.70	
				1.50
D	26	TRC-83-18	2.32/2.57	

Appendix A

534

LEGEND

Q	*QUATERNARY* Glacial deposits & alluvium
Kcr	*CRUISER FORMATION* Mudstone, siltstone
Kgd	*GOODRICH FORMATION* Sandstone, minor conglomerate, siltstone, mudstone
Kha	*HASLER FORMATION* Mudstone, siltstone, thin sandstone
Kcm	*COMMOTION FORMATION* Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
Kmb	*MOOSEBAR FORMATION* Mudstones, minor siltstones, marine
Kbs	*BLUESKY* Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
Kgt	*GETHING FORMATION* Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit; COAL
Kdr	*DRESSER FORMATION* Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates
JKb	*BRENOT FORMATION* Lithic "salt & pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
JKmc	*MONACH FORMATION* Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
JKbp	*BEATTIE PEAKS FORMATION* Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
JKmt	*MONTEITH FORMATION* Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
Jf	*FERNIE FORMATION* Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

GEOLOGICAL CONTACT

FAULT

COAL SEAM *INTERSECTION/EXPOSURE, PROJECTED*

SCALE 1:10,000

METRES 0 100 200 400 600 800 1000

Pr - Goodrich 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
8000 N

G83x10

PREPARED BY: E.S., B.C., R.I., M.J.M.	SCALE 1:10,000
APPROVED BY: V. DUFORD DATE: OCT./83	DRAWING No. GDR-83-272

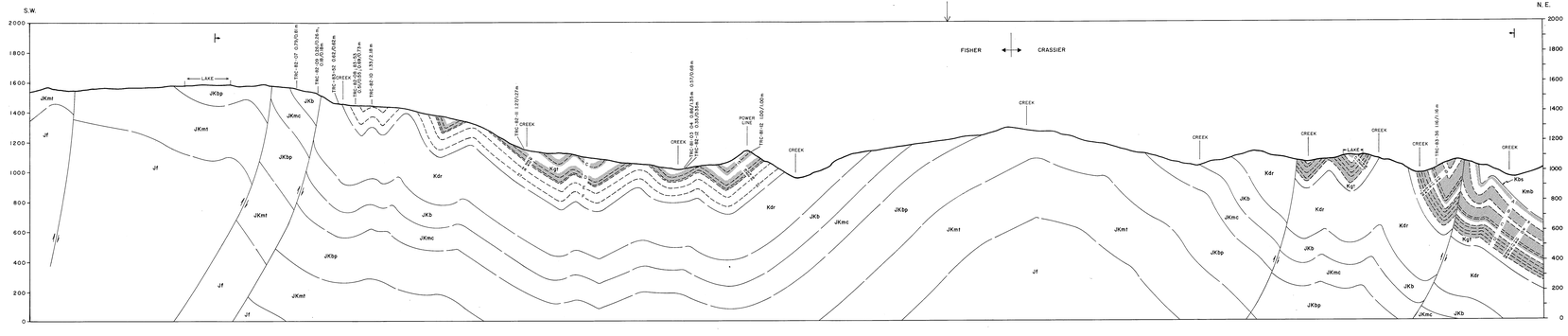
9000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				43.67
B	5	DDH-81-12	2.71/3.22	
				28.48
	7	DDH-81-12	1.04//1.04	
				13.68
	8	DDH-81-12	1.70//1.70	
				3.64
	9	DDH-81-12	1.47/2.12	
				61.25
C	12	DDH-81-12	0.56/0.65	
				19.93
	13	DDH-81-12	1.03//1.08	
				11.83
	14	DDH-81-12	0.59/0.93	
				36.05
D	17	DDH-81-12	0.53/0.53	
				24.57
	19	TRC-83-38	4.40/4.65	
				6.62
	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07//1.07	
				3.97
	23	TRC-83-46	0.56/0.56	
				37.78
E	26	TRC-83-34	1.80//1.85	
				58.15
F	27	TRC-83-53	0.69/0.73	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
	2	DDH-83-01	0.61/0.82	
				6.25
A	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				37.32
	5	DDH-83-01	5.41/5.96	
B				36.31
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98//1.98	
				28.12
	10	DDH-83-03	1.07//1.07	
				61.47
	13	TRC 82-01	1.15/1.15	
C				9.53
	14	TRC-81-05	1.25//1.75	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
	17	TRC-83-56	1.03//1.03	
				19.60
	19	TRC 83-22	4.12/4.39	
D				17.91
	21	DDH-83-02	0.91//1.63	
				12.53
	24	TRC 83-19	1.71//1.71	
				18.87
	25	TRC-83-14	0.70/0.70	
				1.50
	26	TRC-83-18	2.32/2.57	



LEGEND

Q	QUATERNARY Glacial deposits & alluvium
Kcr	CRUISER FORMATION Mudstone, siltstone
Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
Khs	HASLER FORMATION Mudstone, siltstone, thin sandstone
Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
Kmb	MOOSEBAR FORMATION Mudstone, minor siltstone, marine
Kbs	BLUESKY Fine to medium grained sandstones,with or without glauconite, mudstones,thin conglomerate unit at top.
Kgt	GETHING FORMATION Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional tonsteins in upper unit, COAL
Kcr	DRESSER FORMATION Incomplete cyclothems, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits & conglomerates
Jkb	BRENOT FORMATION Lithic salt & pepper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
JKmc	MONACH FORMATION Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained, thinly-bedded black and dark grey shales, silty shales, siltstones, thin sandstones with inconstone banding
JKmt	MONTEITH FORMATION Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
Jf	FERNIE FORMATION Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM
INTERSECTION/EXPOSURE, PROJECTED

Appendix A

534

R. C. Goodwin & Assoc. 85/3/6

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
9000 N

PREPARED BY: K.R.S./K.C./R.L.W.
APPROVED BY: V. DUPERE
DRAFT 1:10,000
DATE OCT./83
DRAWING No. GDR-83-073

2205_571830960035_05

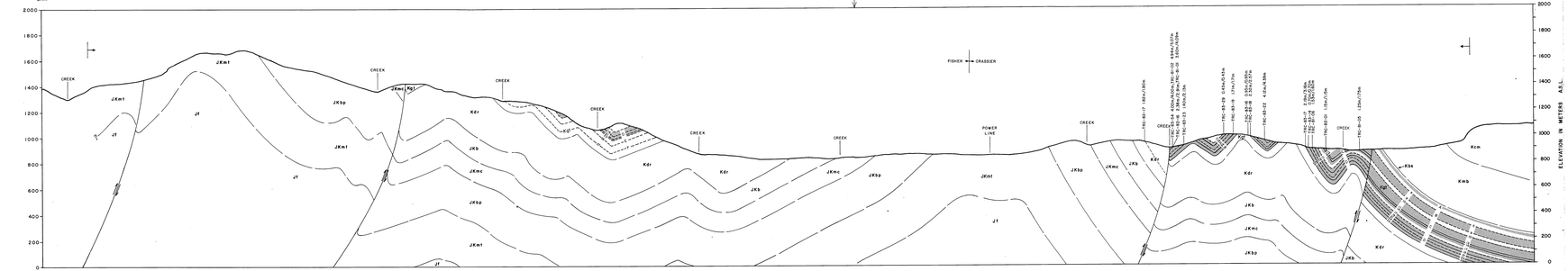
10,000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				43.67
B	5	DDH-81-12	2.71/3.22	
				22.48
	7	DDH-81-12	1.04/1.04	
				13.68
	8	DDH-81-12	1.70/1.70	
				3.64
	9	DDH-81-12	1.47/2.12	
				61.25
C	12	DDH-81-12	0.56/0.65	
				19.93
	13	DDH-81-12	1.03/1.08	
				11.83
	14	DDH-81-12	0.59/0.93	
				36.05
D	17	DDH-81-12	0.53/0.53	
				24.57
	19	TRC-83-38	4.40/4.65	
				6.82
	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07/1.07	
				3.97
	23	TRC-83-46	0.56/0.56	
				37.78
E	26	TRC-83-54	1.80/1.85	
				58.15
F	27	TRC-83-53	0.69/0.73	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
				6.25
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	
				36.41
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.47
	13	TRC-82-01	1.15/1.15	
				9.53
	14	TRC-81-05	1.25/1.75	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				19.60
	19	TRC-83-22	4.12/4.39	
				17.91
	21	DDH-83-02	0.91/1.63	
				12.53
	24	TRC-83-19	1.71/1.71	
				18.87
	25	TRC-83-14	0.70/0.70	
				1.50
	26	TRC-83-18	2.32/2.57	



LEGEND

Q	QUATERNARY	Glacial deposits & alluvium
Kcr	CRUISER FORMATION	Mudstone, siltstone
Kgd	GOODRICH FORMATION	Sandstone, minor conglomerate, siltstone, mudstone
Khs	HASLER FORMATION	Mudstone, siltstone, thin sandstone
Kcm	COMMOTION FORMATION	Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
Kmb	MOOSEBAR FORMATION	Mudstones, minor siltstones, marine
Kbs	BLUESKY	Fine to medium grained sandstoneswith or without glauconite, siltstone with conglomerate unit at top
Kgt	GETHING FORMATION	Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, subtitled plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL
Kdr	DRESSER FORMATION	Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, pink & orange sandstone
JKb	BRENOT FORMATION	Lithic tuff & upper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
JKmc	MONACH FORMATION	Interbedded fine to coarsesandstones, with thick beds of clean, coarse grained arkosic lithic & quartzose sandstones at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
JKbp	BEATTIE PEAKS FORMATION	Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shale, siltstones, thin sandstones with ironstone banding
JKmt	MONTEITH FORMATION	Grey & brown sandstones, fine to medium grained, fine to very coarse grained quartzitic. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
Jf	FERNIE FORMATION	Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM INTERSECTION-EXPOSURE, PROJECTED

UPPER CRET. / LOWER CRETACEOUS / JURASSIC TRANSITIONAL / JURASSIC
FORT ST. JOHN GROUP / CRASSIER GROUP / BOWSER BASIN GEOLOGIC GROUP

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

Appendix A
534

Exhibit No. 22(a)

GULF CANADA RESOURCES INC.
Coal Division
CALGARY

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
10000 N

PREPARED BY: J.A.B., R.L., K.L.M.N.
DRAWN BY: K.L.M.N.
CHECKED BY: K.GRIFFITHS
DATE: OCT./83
DRAWING No.: 83-N-10

DATA_STABDOOO3.48

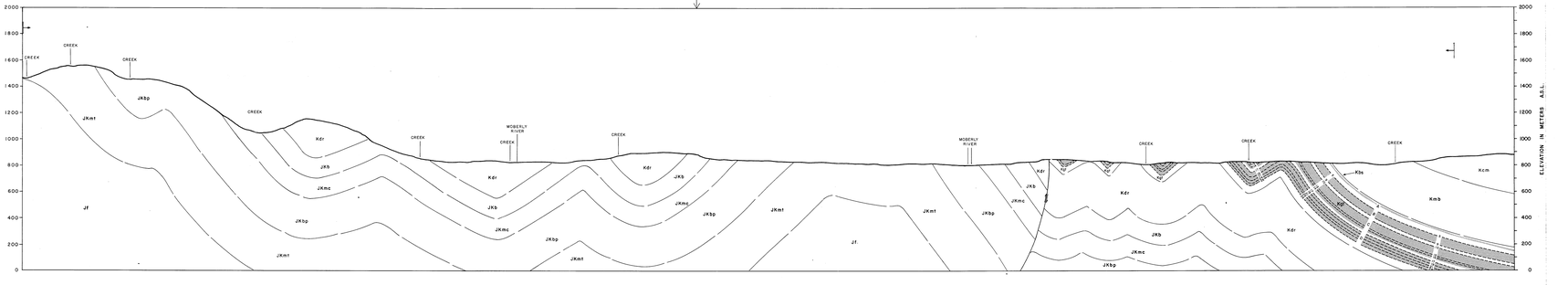
11,000 N

FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				43.67
B	5	DDH-81-12	2.71/3.22	
				22.48
	7	DDH-81-12	1.04/1.04	
				13.68
	8	DDH-81-12	1.70/1.70	
				3.64
	9	DDH-81-12	1.47/2.12	
				61.25
C	12	DDH-81-12	0.56/0.65	
				19.93
	13	DDH-81-12	1.03/1.08	
				11.83
	14	DDH-81-12	0.59/0.93	
				36.05
D	17	DDH-81-12	0.53/0.53	
				24.57
	19	TRC-83-38	4.40/4.65	
				6.82
	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07/1.07	
				3.97
	23	TRC-83-46	0.56/0.56	
				37.78
E	26	TRC-83-34	1.80/1.85	
				58.15
F	27	TRC-83-53	0.69/0.73	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.67/0.82	
				6.25
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	
				36.41
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.47
	13	TRC-82-01	1.15/1.15	
				9.53
	14	TRC-81-05	1.25/1.75	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				19.60
	19	TRC-83-22	4.12/4.39	
				17.91
	21	DDH-83-02	0.91/1.63	
				12.53
	24	TRC-83-19	1.71/1.71	
				18.87
	25	TRC-83-14	0.70/0.70	
				1.50
	26	TRC-83-18	2.32/2.57	



LEGEND

- Q — QUATERNARY — Glacial deposits & alluvium
- Kcr — CRUISER FORMATION — Mudstone, siltstone
- Kgd — GOODRICH FORMATION — Sandstone, minor conglomerate, siltstone, mudstone
- Kha — HASLER FORMATION — Mudstone, siltstone, thin sandstone
- Kcm — COMMOTION FORMATION — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — MOOSEBAR FORMATION — Mudstones, minor siltstones, marine
- Kbs — BLUESKY — Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- Kgt — GETHING FORMATION — Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL
- Kdr — DRESSER FORMATION — Incomplete cyclothems, discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates
- JKb — BRENCH FORMATION — Light grey to beige sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONON FORMATION — Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — BEATTIE PEAKS FORMATION — Buff to brownish sandstones, fine to medium grained, thinly-bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — MONTEITH FORMATION — Grey & buff sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional conglomerates
- Jf — FERNIE FORMATION — Dark grey & black shales, mudstones, sandstones, siltstone, marine

UPPER CRETACEOUS | LOWER CRETACEOUS | JURASSIC-TRANSITIONAL
FORT ST. JOHN GROUP | CRASSIER GROUP | BLUESKY GROUP

GULF LICENCE BOUNDARIES
BASELINE LOCATION
GEOLOGICAL CONTACT
FAULT
COAL SEAM INTERSECTION/EXPOSURE, PROJECTED

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

Appendix A

534

T.R. Goodrich, B.Sc.

GULF CANADA RESOURCES INC. — Coal Division — CALGARY, ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH-MOBERLY
GEOLOGICAL CROSS SECTION
11000 N

DRAWN BY: E.R.S. / L.W.M. — DATE: OCT/83 — DRAWING No. 83-2179
COMPILED BY: R. HOPPER — DATE: OCT/83 — DRAWING No. 83-2179

2204.5718309990833.dd

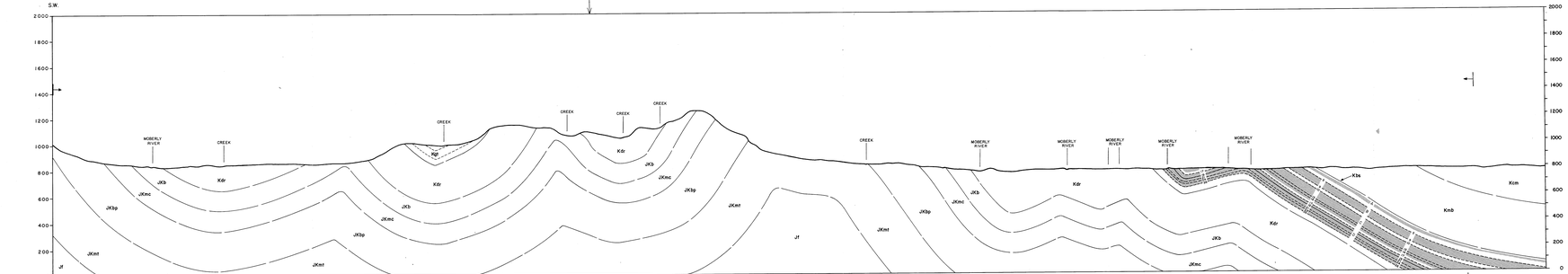
12,000 N

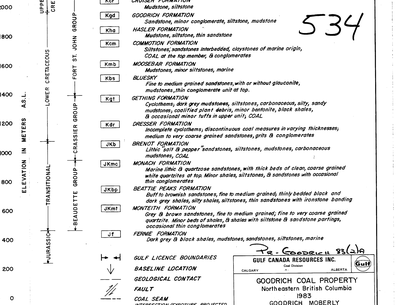
FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK., (m/m)	INTERBURDEN TRUE THK., (m)
A	4	TRC-83-28	2.21/2.58	
				43.67
B	5	DDH-81-12	2.71/3.22	
				22.48
	7	DDH-81-12	1.04/1.04	
				13.68
	8	DDH-81-12	1.70/1.70	
				3.64
	9	DDH-81-12	1.47/2.12	
				61.25
C	12	DDH-81-12	0.56/0.65	
				19.93
	13	DDH-81-12	1.03/1.08	
				11.83
	14	DDH-81-12	0.59/0.93	
				36.05
D	17	DDH-81-12	0.53/0.53	
				24.57
	19	TRC-83-38	4.40/4.65	
				6.82
	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07/1.07	
				3.97
	23	TRC-83-46	0.56/0.56	
				37.78
E	26	TRC-83-34	1.80/1.85	
				58.15
F	27	TRC-83-53	0.69/0.73	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK., (m/m)	INTERBURDEN TRUE THK., (m)
A	2	DDH-83-01	0.61/0.82	
				6.25
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	
				36.41
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.47
	13	TRC-82-01	1.15/1.15	
				9.53
	14	TRC-81-05	1.25/1.75	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				19.60
	19	TRC-83-22	4.12/4.39	
				17.91
	21	DDH-83-02	0.91/1.63	
				12.53
	24	TRC-83-19	1.71/1.71	
				18.87
	25	TRC-83-14	0.70/0.70	
				1.50
	26	TRC-83-18	2.32/2.57	





LEGEND

Q — QUATERNARY
Glacial deposits & alluvium

Kcr — CRUISER FORMATION
Mudstone, siltstone

Kgd — GOODRICH FORMATION
Sandstone, minor conglomerate, siltstone, mudstone

Kbs — HASLER FORMATION
Mudstone, siltstone, thin sandstone

Kcm — COMMOTION FORMATION
Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates

Kmb — MOOSEBAR FORMATION
Mudstones, minor siltstones, marine

Kbs — BLUESKY
Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.

Kgt — GETHING FORMATION
Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, rootlet plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL

Kdr — DRESSER FORMATION
Medium grey cyclothems, discreet coal measures in varying thicknesses, medium to very coarse grained sandstones, grits & conglomerates

JKb — BRISTOL FORMATION
Lithic "salt & pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL

JKmc — MONACH FORMATION
Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates

JKbp — BEATTIE PEAKS FORMATION
Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding

JKmt — MONTEITH FORMATION
Grey sandstones, mudstones, fine to medium grained, fine to very coarse grained quartzite, minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates

JT — FERNIE FORMATION
Dark grey & black shales, mudstones, sandstones, siltstones, marine

T. Goodrich 83/3/9
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
12,000 N

SCALE: 1:10,000
PREPARED BY: R.B.B., T.L.W., K.M.W. DATE: 83/03/09
APPROVED BY: D. DEPEW DATE: 83/03/09 DRAWING No. GRP-83-570

Appendix A

534

C-83-H

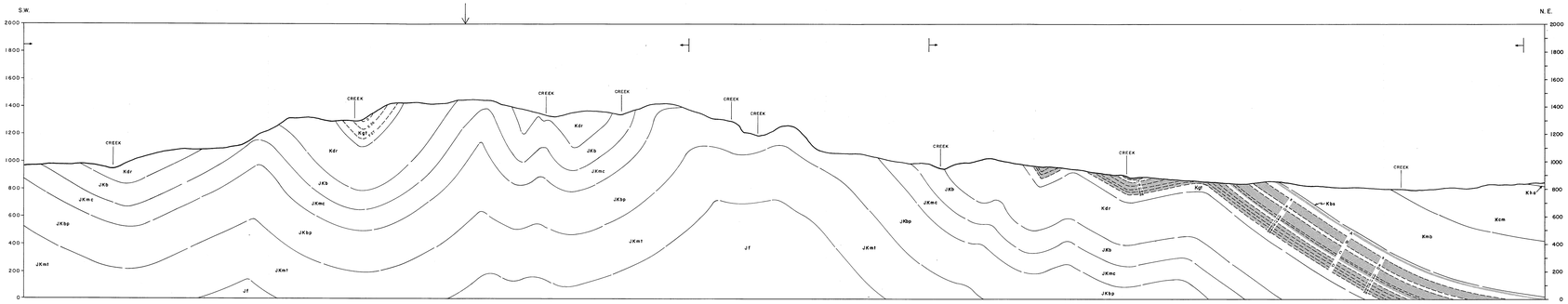
13,000 N

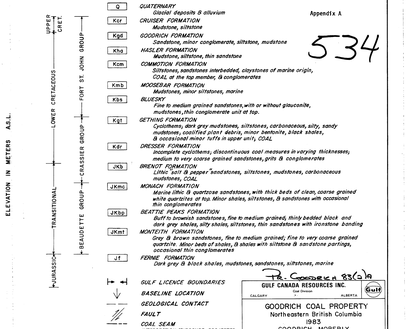
FISHER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	4	TRC-83-28	2.21/2.58	
				43.67
B	5	DDH-81-12	2.71/3.22	
				22.48
	7	DDH-81-12	1.04/1.04	
				16.68
	8	DDH-81-12	1.70/1.70	
				3.64
	9	DDH-81-12	1.47/2.12	
				61.25
C	12	DDH-81-12	0.56/0.65	
				19.93
	13	DDH-81-12	1.03/1.08	
				11.83
	14	DDH-81-12	0.59/0.93	
				36.05
D	17	DDH-81-12	0.53/0.53	
				24.57
	19	TRC-83-38	4.40/4.65	
				6.82
	20	TRC-83-45	0.68/0.79	
				8.18
	21	TRC-83-48	0.96/0.96	
				3.19
	22	TRC-83-47	1.07/1.07	
				3.97
	23	TRC-83-46	0.56/0.56	
				37.78
E	26	TRC-83-34	1.80/1.85	
				58.15
F	27	TRC-83-53	0.69/0.73	

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
				6.25
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.72	
				37.32
B	5	DDH-83-01	5.41/5.96	
				36.41
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.47
	13	TRC-82-01	1.15/1.15	
				9.53
	14	TRC-81-05	1.25/1.75	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				19.60
	19	TRC-83-22	4.12/4.39	
				17.91
	21	DDH-83-02	0.91/1.63	
				12.53
	24	TRC-83-19	1.71/1.71	
				18.87
	25	TRC-83-14	0.70/0.70	
				1.50
	26	TRC-83-18	2.32/2.57	





Appendix A

534

T.R. Chichester et al 93/3/19

GULF CANADA RESOURCES INC
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
13000 N

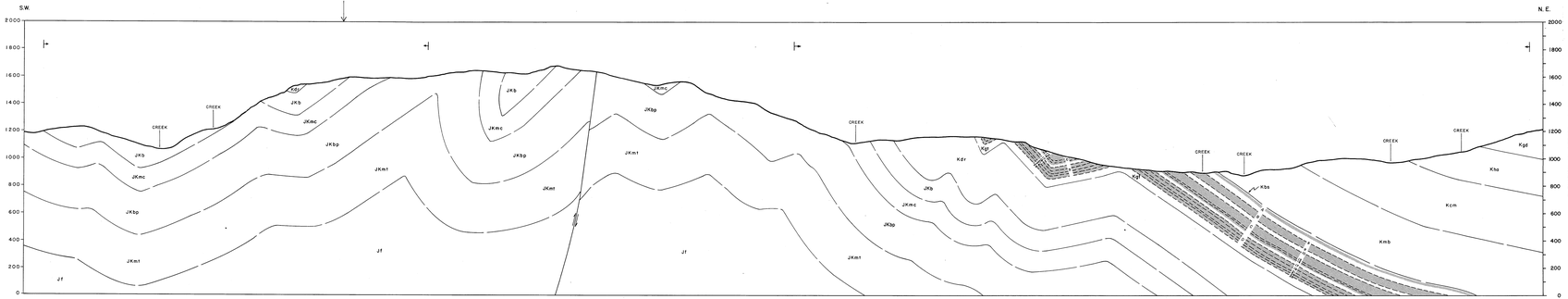
PROJECT NO. 1-83-0101
PREPARED BY: A.B.M., R.L., R.M.P.
APPROVED BY: T. CHICHESTER
PLOTTED: DEC 1983 DRAWING No. 830101-01

1205_5713929000001.vsd

14,000 N

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.62	6.25
	3	DDH-83-01	0.60/0.60	5.72
	4	DDH-83-01	0.72/0.87	37.32
B	5	DDH-83-01	5.41/5.96	36.41
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	28.12
C	10	DDH-83-03	1.07/1.07	61.47
	13	TRC-82-01	1.15/1.15	9.53
	14	TRC-81-05	1.25/1.75	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	21.50
D	17	TRC-83-56	1.03/1.03	19.60
	19	TRC-83-22	4.12/4.39	17.91
	21	DDH-83-02	0.91/1.63	12.53
	24	TRC-83-19	1.71/1.71	18.87
	25	TRC-83-14	0.70/0.70	1.50
	26	TRC-83-18	2.32/2.57	



ELEVATION IN METRES A.S.L.

UPPER CRETACEOUS — LOWER CRETACEOUS — JURASSIC — TRANSITIONAL

FORT ST. JOHN GROUP — CRASSIER GROUP — BRAZEAU/SPIRIT RIVER GROUP

METRES 0 100 200 400 600 800 1000

SCALE 1:10,000

LEGEND

Q	QUATERNARY *Glacial deposits & alluvium*
Kdr	CRUISER FORMATION *Mudstone, siltstone*
Kgd	GOODRICH FORMATION *Sandstone, minor conglomerate, siltstone, mudstone*
Kha	HASLER FORMATION *Mudstone, siltstone, thin sandstone*
Kcm	COMMOTION FORMATION *Siltstone, sandstones interbedded, cityatines of marine origin, COAL at the top member, & conglomerates*
Kmb	MOOSEBAR FORMATION *Mudstones, minor siltstones, marine*
Kbs	BLUESKY *Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.*
Kgl	GETHING FORMATION *Cystdmes, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, calcified plant debris, minor bentonite, black shales, bentonite, volcanic tuffs in upper unit; COAL*
Kdr	DRESSER FORMATION *Incompete cystdhems, discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates*
JKb	BRENOT FORMATION *Lithic tuff & dapper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL*
JKmc	MONACH FORMATION *Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates*
JKbp	BEATTIE PEAKS FORMATION *Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding*
JKmt	MONTEITH FORMATION *Grey & brown sandstones, fine to medium grained, fine to very coarse grained quartzites, minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates*
J1	FERNIE FORMATION *Dark grey & black shales, mudstones, sandstones, siltstones, marine*

GULF LICENCE BOUNDARIES

BASELINE LOCATION

GEOLOGICAL CONTACT

FAULT

COAL SEAM
INTERSECTION/EXPOSURE, PROJECTED

Appendix A

534

TC-Geotechnical 85(2)a

GULF CANADA RESOURCES INC.
Coal Division — CALGARY, ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1985
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
14000 N

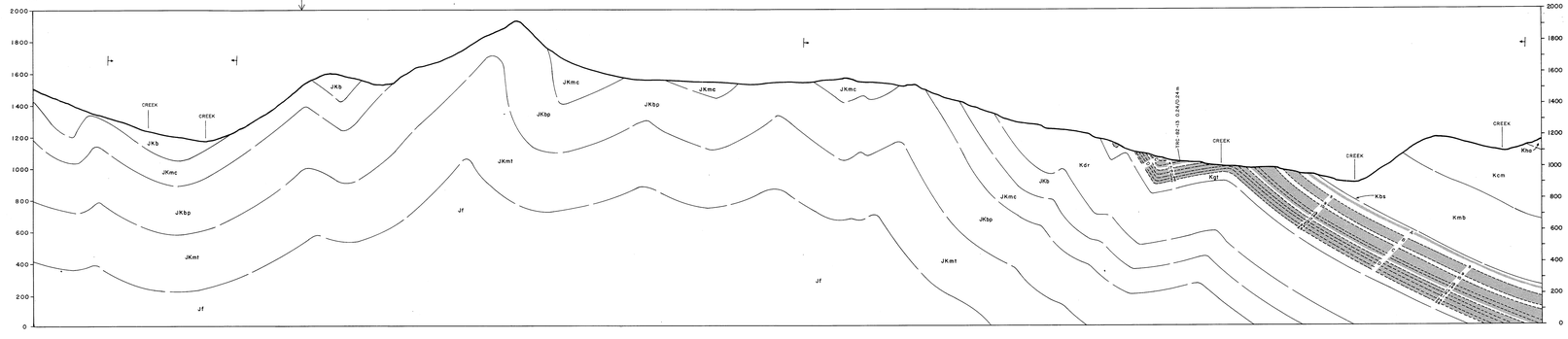
SCALE 1:10,000 — DRAWN BY: C.L.H.B.
PREPARED BY: E.A., R.S., R.L., P.E.
APPROVED BY: K. DUFORD — DATE: OCT. 7/85 — DRAWING No: GM-85-276

EDM_ST1/85090DH.VS

15,000 N

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m's)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	6.25
	3	DDH-83-01	0.60/0.60	5.72
	4	DDH-83-01	0.72/0.87	37.32
B	5	DDH-83-01	5.41/5.96	36.41
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	28.12
C	10	DDH-83-03	1.07/1.07	61.47
	13	TRC-82-01	1.15/1.15	9.53
	14	TRC-81-05	1.25/1.75	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	21.50
D	17	TRC-83-56	1.03/1.03	20.98
	19	TRC-83-02	2.94/3.01	17.91
	21	DDH-83-02	0.91/1.63	12.53
	24	TRC-83-19	1.71/1.71	18.87
	25	TRC-83-14	0.70/0.70	2.56
	26	TRC-83-01	0.90/1.51	



LEGEND

- Q — *QUATERNARY* — *Glacial deposits & alluvium*
- Kcr — *CRUISER FORMATION* — *Mudstone, siltstone*
- Kgd — *GOODRICH FORMATION* — *Sandstone, minor conglomerate, siltstone, mudstone*
- Kha — *HASLER FORMATION* — *Mudstone, siltstone, thin sandstone*
- Kcm — *COMMOTION FORMATION* — *Siltstones, sandstones interbedded, calcystones of marine origin, COAL at the top member, & conglomerates*
- Kmb — *MOOSEBAR FORMATION* — *Mudstones, minor siltstones, marine*
- Kbs — *BLUESKY* — *Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.*
- Kgt — *GETHING FORMATION* — *Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL*
- Kdr — *DRESSER FORMATION* — *Incomplete cyclothem, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits & conglomerates*
- Jkb — *BRENOT FORMATION* — *Lithic salt & pepper sandstones, siltstones, mudstones, carbonaceous mudstones, COAL*
- JKmc — *MONACH FORMATION* — *Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates*
- JKbp — *BEATTIE PEAKS FORMATION* — *Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding*
- JKmt — *MONTEITH FORMATION* — *Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates*
- Jf — *FERNIE FORMATION* — *Dark grey & black shales, mudstones, sandstones, siltstones, marine*

- *GULF LICENCE BOUNDARIES*
- *BASELINE LOCATION*
- *GEOLOGICAL CONTACT*
- *FAULT*
- *COAL SEAM* — *INTERSECTION/EXPOSURE, PROJECTED*

Appendix A

534

Pr. Crassier 83(3)a

GULF CANADA RESOURCES INC.
Fort Nelson, CALGARY, ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
15000 N (E-83-17)

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

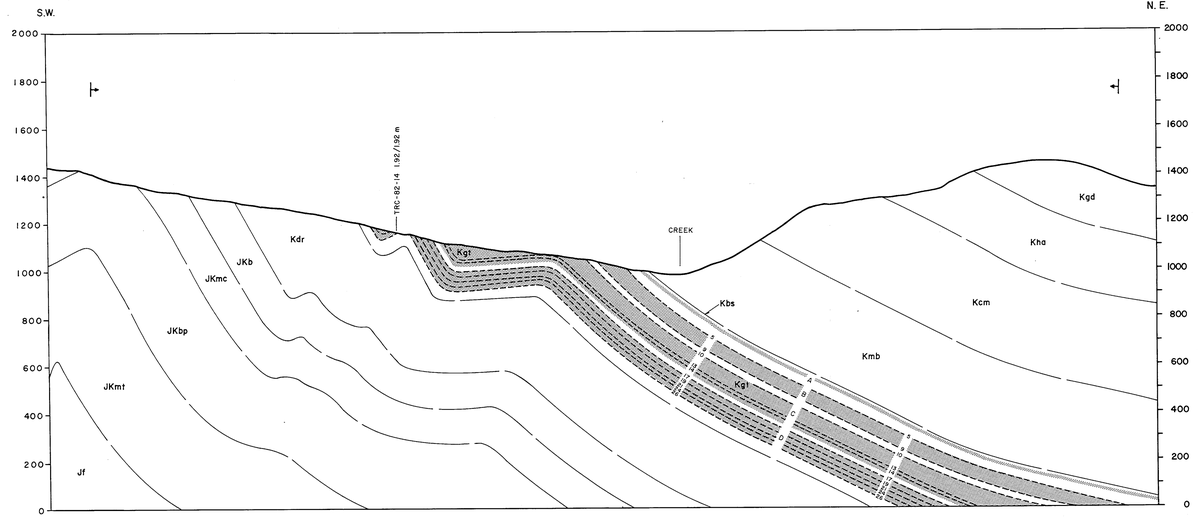
MAP 1:10,000
PREPARED BY: E.B., B.C., P.L., M.A.
APPROVED BY: K. DUFORD
DATE: OCT./83
DRAWING No: 059-83-E79

1005_07183099600X-XS

16,000 N

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	6.25
	3	DDH-83-01	0.60/0.60	5.72
	4	DDH-83-01	0.72/0.87	37.32
B	5	DDH-83-01	5.41/5.96	36.41
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	28.12
C	10	DDH-83-03	1.07/1.07	61.47
	13	TRC-82-01	1.15/1.15	9.53
	14	TRC-81-05	1.25/1.75	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	21.50
D	17	TRC-83-56	1.03/1.03	19.20
	19	TRC-83-22	4.12/4.39	17.91
	21	DDH-83-02	0.91/1.63	12.53
	24	TRC-83-19	1.71/1.71	18.87
	25	TRC-83-14	0.70/0.70	2.56
	26	TRC-83-01	0.90/1.51	



LEGEND

- Q — *QUATERNARY* — Glacial deposits & alluvium
- Kcr — *CRUISER FORMATION* — Mudstone, siltstone
- Kgd — *GOODRICH FORMATION* — Sandstone, minor conglomerate, siltstone, mudstone
- Kha — *HASLER FORMATION* — Mudstone, siltstone, thin sandstone
- Kcm — *COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — *MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
- Kbs — *BLUESKY* — Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- Kgt — *GETHING FORMATION* — Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit, COAL
- Kdr — *DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates
- JKb — *BRENOT FORMATION* — Lithic salt & pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION* — Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — *BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION* — Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — *FERNIE FORMATION* — Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

GEOLOGICAL CONTACT

FAULT

COAL SEAM — INTERSECTION/EXPOSURE, PROJECTED

SCALE 1:10,000

METRES 0 100 200 400 600 800 1000

Appendix A

534

Pre-Goodrich 83(2)a

GULF CANADA RESOURCES INC. Coal Division — CALGARY — ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
16000 N G-83-X-18

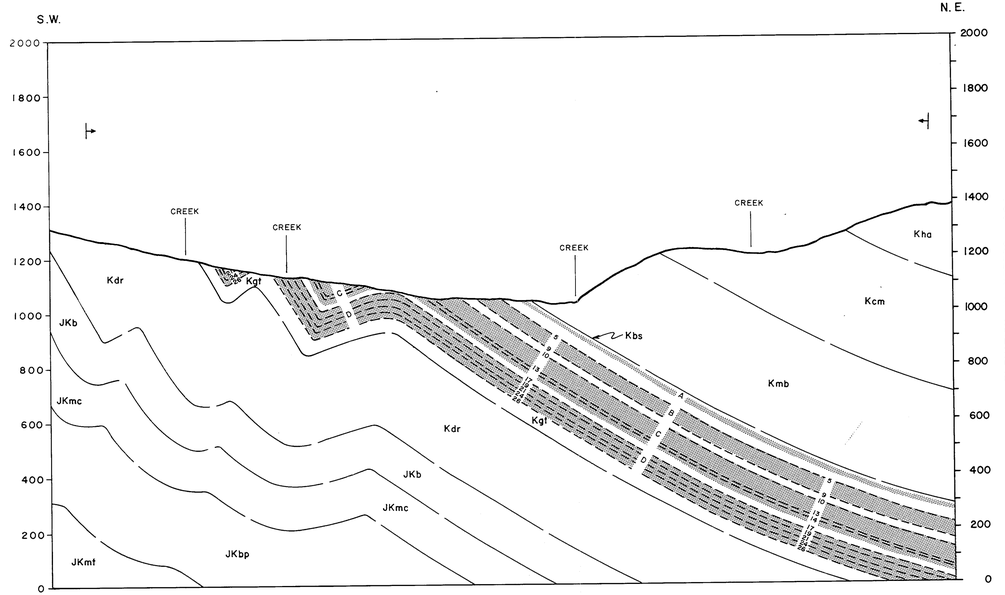
PREPARED BY: E.S., B.C., R.I., M.J.M. — SCALE 1:10,000
APPROVED BY: V. DUFORD — DATE: OCT/83 — DRAWING No. GDR-83-28G

1205.571830998004.XS

17,000 N

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	6.25
	3	DDH-83-01	0.60/0.60	5.72
	4	DDH-83-01	0.72/0.87	37.32
B	5	DDH-83-01	5.41/5.96	36.41
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	28.12
C	10	DDH-83-03	1.07/1.07	61.47
	13	TRC-82-01	1.15/1.15	9.53
	14	TRC-81-05	1.25/1.75	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	21.50
D	17	TRC-83-56	1.03/1.03	20.98
	19	TRC-83-02	2.94/3.01	17.91
	21	DDH-83-02	0.91/1.63	12.53
	24	TRC-83-19	1.71/1.71	18.87
	25	TRC-83-14	0.70/0.70	2.56
	26	TRC-83-01	0.90/1.51	



UPPER CRET. / LOWER CRETACEOUS / TRANSITIONAL / JURASSIC

FORT ST. JOHN GROUP — CRASSIER GROUP — BEAUDETTE GROUP

LEGEND

- Q — *QUATERNARY* — Glacial deposits & alluvium
- Kcr — *CRUISER FORMATION* — Mudstone, siltstone
- Kgd — *GOODRICH FORMATION* — Sandstone, minor conglomerate, siltstone, mudstone
- Kha — *HASLER FORMATION* — Mudstone, siltstone, thin sandstone
- Kcm — *COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — *MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
- Kbs — *BLUESKY* — Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- Kgt — *GETHING FORMATION* — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit; COAL
- Kdr — *DRESSER FORMATION* — Incompetent cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates
- JKb — *BRENOT FORMATION* — Lithic "salt & pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION* — Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — *BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION* — Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — *FERNIE FORMATION* — Dark grey & black shales, mudstones, sandstones, siltstones, marine

- *GULF LICENCE BOUNDARIES*
- *BASELINE LOCATION*
- *GEOLOGICAL CONTACT*
- *FAULT*
- *COAL SEAM* — INTERSECTION/EXPOSURE, PROJECTED

SCALE 1:10,000

METRES 0 100 200 400 600 800 1000

Appendix A

534

Pre-Goodrich 83(2)a

GULF CANADA RESOURCES INC.
Coal Division
CALGARY · ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
17000 N G83-17

PREPARED BY: E.S., B.C., R.I., M.J.M. — SCALE 1:10,000
APPROVED BY: V. DUFORD — DATE: OCT./83 — DRAWING No.GDR-83-281

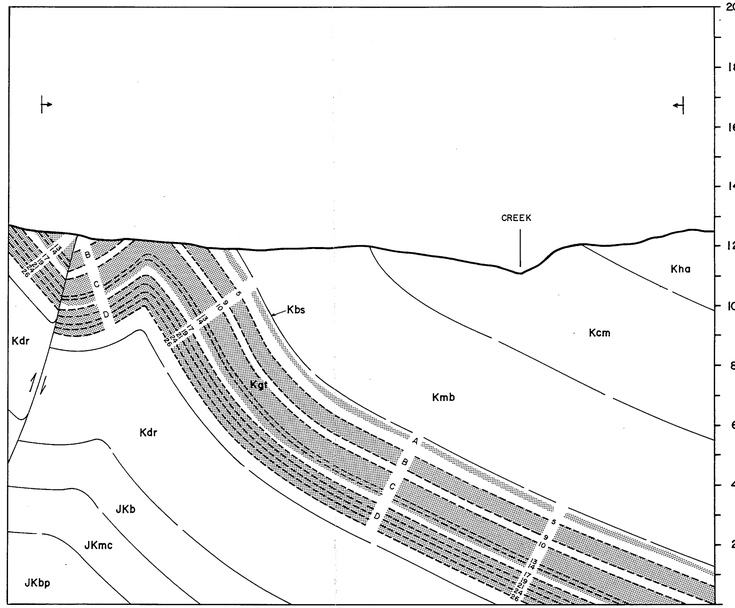
(205,571830998004.XS

18,000 N

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	
				6.25
	3	DDH-83-01	0.60/0.60	
				5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	
				36.41
	7	DDH-83-03	0.78/0.78	
				11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	
				61.47
	13	TRC-82-01	1.15/1.15	
				9.53
	14	TRC-81-05	1.25/1.75	
				9.25
	15	TRC-83-50	0.58/0.87	
				2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	
				20.98
	19	TRC-83-02	2.94/3.01	
				17.91
	21	DDH-83-02	0.91/1.63	
				12.53
	24	TRC-83-19	1.71/1.71	
				18.87
	25	TRC-83-14	0.70/0.70	
				2.56
	26	TRC-83-01	0.90/1.51	

S.W. N.E.



ELEVATION IN METERS A.S.L.

2000 1800 1600 1400 1200 1000 800 600 400 200 0

UPPER CRET. — LOWER CRETACEOUS — JURASSIC TRANSITIONAL

FORT ST. JOHN GROUP — CRASSIER GROUP — BEAUDETTE GROUP

LEGEND

- Q — QUATERNARY — Glacial deposits & alluvium
- Kcr — CRUISER FORMATION — Mudstone, siltstone
- Kgd — GOODRICH FORMATION — Sandstone, minor conglomerate, siltstone, mudstone
- Kha — HASLER FORMATION — Mudstone, siltstone, thin sandstone
- Kcm — COMMOTION FORMATION — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — MOOSEBAR FORMATION — Mudstones, minor siltstones, marine
- Kbs — BLUESKY — Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- Kgt — GETHING FORMATION — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit; COAL
- Kdr — DRESSER FORMATION — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates
- JKb — BRENOT FORMATION — Lithic "salt & pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONACH FORMATION — Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — BEATTIE PEAKS FORMATION — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — MONTEITH FORMATION — Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — FERNIE FORMATION — Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

GEOLOGICAL CONTACT

FAULT

COAL SEAM
INTERSECTION/EXPOSURE, PROJECTED

SCALE 1:10,000

METRES 0 100 200 400 600 800 1000

Appendix A

534

PR-GOODRICH 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
18000 N 483x28

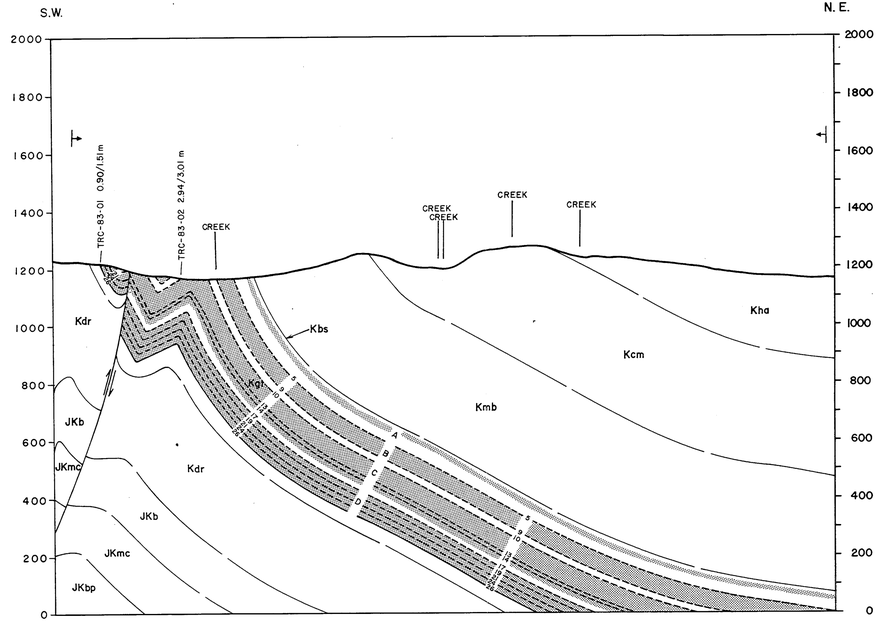
PREPARED BY: E.S., B.C., R.I., M.J.M. SCALE 1:10,000
APPROVED BY: V. DUFORD DATE: OCT./83 DRAWING No.SDR-83-282

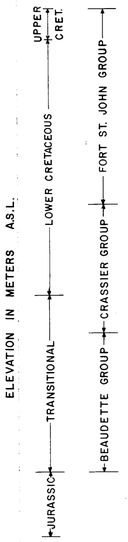
[205,57183099B004.XS

19,000 N

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	6.25
	3	DDH-83-01	0.60/0.60	5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	36.41
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	61.47
	13	TRC-82-01	1.15/1.15	9.53
	14	TRC-81-05	1.25/1.75	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	19.00
	19	TRC-83-02	4.12/4.39	17.91
	21	DDH-83-02	0.91/1.63	12.53
	24	TRC-83-19	1.71/1.71	18.87
	25	TRC-83-14	0.70/0.70	2.56
	26	TRC-83-01	0.90/1.51	





LEGEND

- Q — QUATERNARY: Glacial deposits & alluvium
- Kcr — CRUISER FORMATION: Mudstone, siltstone
- Kgd — GOODRICH FORMATION: Sandstone, minor conglomerate, siltstone, mudstone
- Kha — HASLER FORMATION: Mudstone, siltstone, thin sandstone
- Kcm — COMMOTION FORMATION: Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — MOOSEBAR FORMATION: Mudstones, minor siltstones, marine
- Kbs — BLUESKY: Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- Kgt — GETHING FORMATION: Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit; COAL
- Kdr — DRESSER FORMATION: Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates
- JKb — BRENOT FORMATION: Lithic salt & pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — MONACH FORMATION: Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — BEATTIE PEAKS FORMATION: Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — MONTEITH FORMATION: Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — FERNIE FORMATION: Dark grey & black shales, mudstones, sandstones, siltstones, marine

- GULF LICENCE BOUNDARIES
- BASELINE LOCATION
- GEOLOGICAL CONTACT
- FAULT
- COAL SEAM INTERSECTION/EXPOSURE, PROJECTED

SCALE 1:10,000
METRES 0 100 200 400 600 800 1000

Appendix A

534

PR. GOODRICH 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
19000 N G83X21

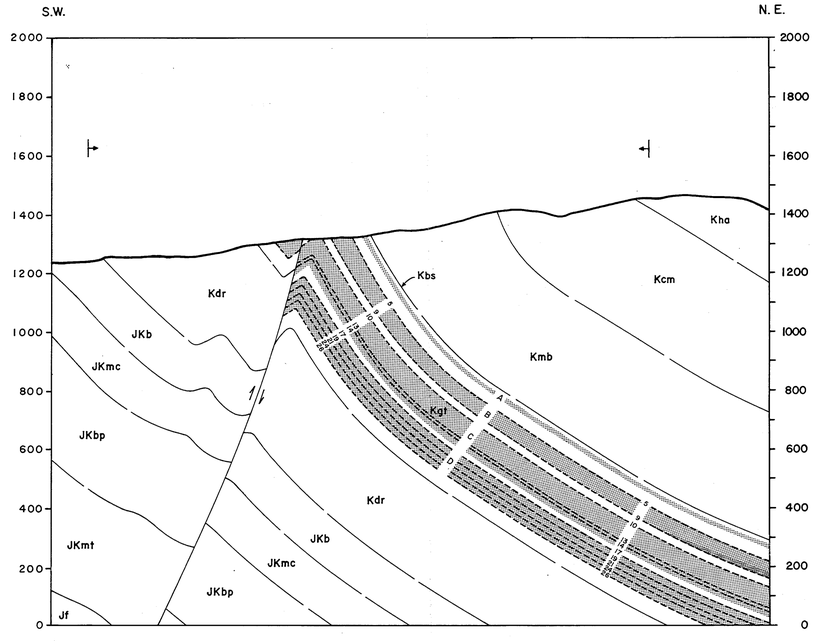
PREPARED BY: E.S., B.C., R.I., M.J.M. SCALE 1:10,000
APPROVED BY: V. DUFORD DATE: OCT./83 DRAWING No.GDR-83-285

1205,571830998004.XS

20,000 N

CRASSIER
GETHING FORMATION
COAL SEAM DATA

ZONE	SEAM	DATA SOURCE	COAL/COAL+ROCK TRUE THK. (m/m)	INTERBURDEN TRUE THK. (m)
A	2	DDH-83-01	0.61/0.82	6.25
	3	DDH-83-01	0.60/0.60	5.72
	4	DDH-83-01	0.72/0.87	
				37.32
B	5	DDH-83-01	5.41/5.96	36.41
	7	DDH-83-03	0.78/0.78	11.87
	9	DDH-83-03	1.98/1.98	
				28.12
C	10	DDH-83-03	1.07/1.07	61.47
	13	TRC-82-01	1.15/1.15	9.53
	14	TRC-81-05	1.25/1.75	9.25
	15	TRC-83-50	0.58/0.87	2.90
	16	TRC-83-50	0.89/0.89	
				21.50
D	17	TRC-83-56	1.03/1.03	20.98
	19	TRC-83-02	2.94/3.01	17.91
	21	DDH-83-02	0.91/1.63	12.53
	24	TRC-83-19	1.71/1.71	18.87
	25	TRC-83-14	0.70/0.70	2.56
	26	TRC-83-01	0.90/1.51	



Appendix A

534

LEGEND

- Q — *QUATERNARY* — Glacial deposits & alluvium
- Kcr — *CRUISER FORMATION* — Mudstone, siltstone
- Kgd — *GOODRICH FORMATION* — Sandstone, minor conglomerate, siltstone, mudstone
- Kha — *HASLER FORMATION* — Mudstone, siltstone, thin sandstone
- Kcm — *COMMOTION FORMATION* — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, & conglomerates
- Kmb — *MOOSEBAR FORMATION* — Mudstones, minor siltstones, marine
- Kbs — *BLUESKY* — Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top.
- Kgt — *GETHING FORMATION* — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, & occasional minor tuffs in upper unit; COAL
- Kdr — *DRESSER FORMATION* — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits & conglomerates
- JKb — *BRENOT FORMATION* — Lithic "salt & pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
- JKmc — *MONACH FORMATION* — Marine lithic & quartzose sandstones, with thick beds of clean, coarse grained white quartzites at top. Minor shales, siltstones, & sandstones with occasional thin conglomerates
- JKbp — *BEATTIE PEAKS FORMATION* — Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
- JKmt — *MONTEITH FORMATION* — Grey & brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, & shales with siltstone & sandstone partings, occasional thin conglomerates
- Jf — *FERNIE FORMATION* — Dark grey & black shales, mudstones, sandstones, siltstones, marine

GULF LICENCE BOUNDARIES

BASELINE LOCATION

GEOLOGICAL CONTACT

FAULT

COAL SEAM INTERSECTION/EXPOSURE, PROJECTED

SCALE 1: 10,000

METRES 0 100 200 400 600 800 1000

R - GOODRICH 83-24

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GOODRICH MOBERLY
GEOLOGICAL CROSS SECTION
20,000N

PREPARED BY: E.S., B.C., R.I., M.J.M. SCALE 1:10,000
APPROVED BY: V. DUFORD DATE: OCT./83 DRAWING No. GDR-83-284

[205,57183098004,XS

TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
UP. CRET.	Kcr	CRUISER FORMATION Mudstone, siltstone
LOWER CRETACEOUS	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
	Kdr	DRESSER FORMATION Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
JURASSIC	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

TRANSITIONAL — BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN GROUP

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES
- DEPRESSION FORM LINE
- SPOT HEIGHT
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 MILE

0 100 200 400 600 800 1000 METERS

SCALE 1:10 000

123°00' 122°30' 56°00' 55°45' 122°00' 121°30' 55°30' 55°15' 55°00'

534 GOODRICH INDEX MAP

Appendix A

Re: Goodrich 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

930/9WE

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
MOBERLY

GR3G01

PREPARED BY: E.S.	SCALE 1:10 000
APPROVED BY: V.L.D.	DATE: NOV. 1983
	DRAWING No. GDR-83-285

930/9 WE

TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
UPPER CRETACEOUS	Kcr	CRUISER FORMATION Mudstone, siltstone
	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
LOWER CRETACEOUS	Kgt	GETHING FORMATION Cyclothems, dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit, COAL
	Kdr	DRESSER FORMATION Incomplete cyclothems, discontinuous coal measures in varying thicknesses, medium to very coarse grained sandstones, grits and conglomerates
TRANSITIONAL	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top, Minor shales, siltstones and sandstones with occasional thin conglomerates
	JKpp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained, fine to very coarse grained quartzite, Minor beds of shales and shales with siltstone and sandstone partings, occasional thin conglomerates
JURASSIC	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

BEAUDETTE GROUP — CRASSIER GROUP — FORT ST. JOHN GROUP

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- A — A' Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

Conglomerate	Claystone/Mudstone
Sandstone	Coal
Siltstone	Silty Claystone
Quartzite	Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES
- DEPRESSION FORM LINE
- SPOT HEIGHT ×1134
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 1 MILE

0 100 200 400 600 800 1000 METERS

SCALE : 1:10,000

123°00' 122°30' 56°00' 55°45' 122°00' 121°30' 55°30' 55°15' 55°00'

534 GOODRICH INDEX MAP

Appendix A

Pr- Goodrich 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

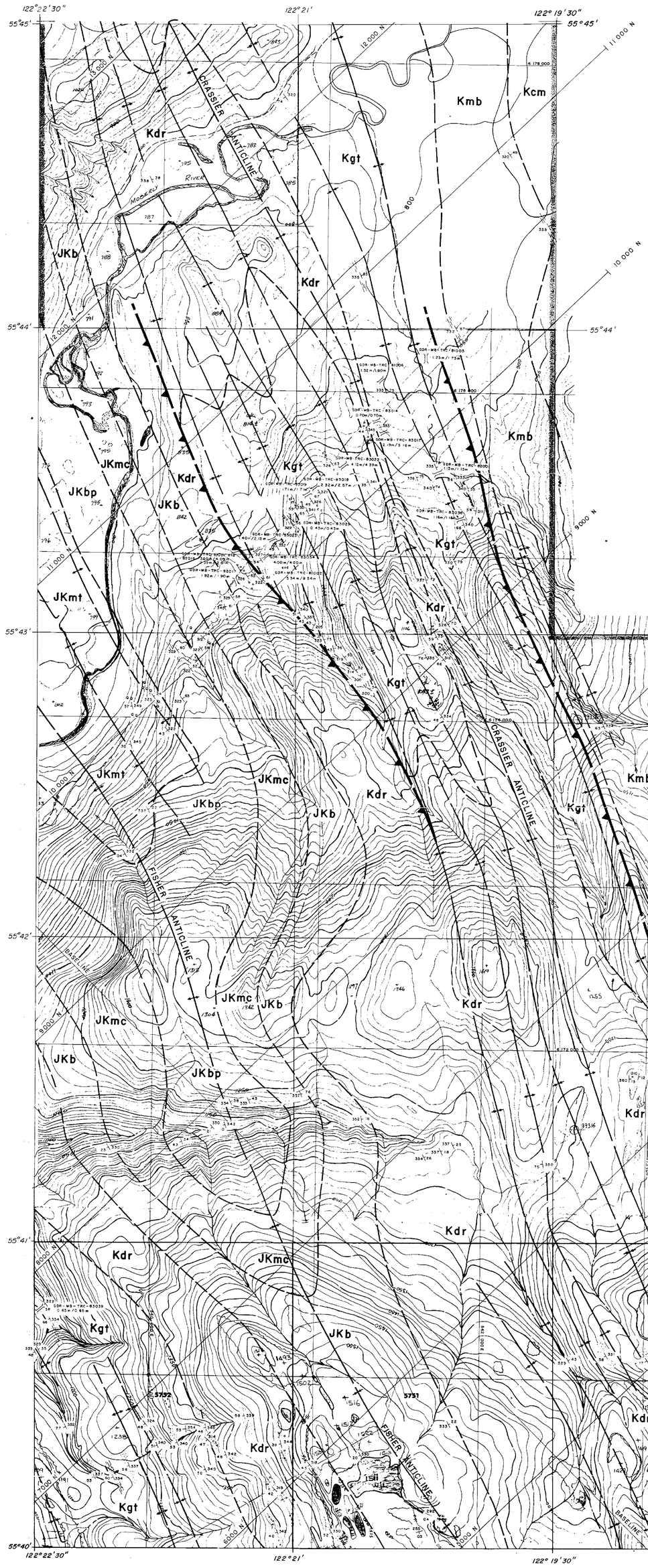
930/9WF

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
MOBERLY

G-83-02

PREPARED BY: B.C.	SCALE 1:10 000
APPROVED BY: V.L.D. DATE: NOV. 1983	DRAWING No. GDR-83-286

930/9WF



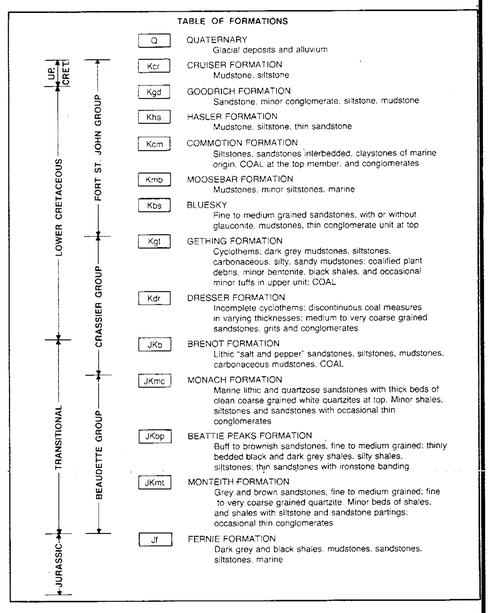


TABLE OF FORMATIONS

		Q	QUATERNARY Glacial deposits and alluvium	
	UPPER CRETACEOUS	Kcr	CRUISER FORMATION Mudstone, siltstone	
		Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone	
		Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone	
		Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates	FORT ST JOHN GROUP
		Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine	
		Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top	
	LOWER CRETACEOUS	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL	
		Kdr	DRESSER FORMATION Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates	CRASSIER GROUP
		JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL	
	TRANSITIONAL	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates	
		JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding	BEAUDETTE GROUP
JURASSIC		JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings, occasional thin conglomerates	
		Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine	

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- A — A' Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

Conglomerate	Claystone/Mudstone
Sandstone	Coal
Siltstone	Silty Claystone
Quartzite	Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES
- DEPRESSION FORM LINE
- SPOT HEIGHT ×1134
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

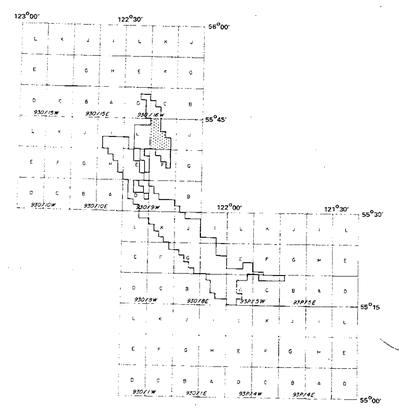
SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 MILE

0 100 200 400 600 800 1000 METERS

SCALE : 1:10,000



534 GOODRICH INDEX MAP

Appendix A

Re - Goodrich 83(2)a

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

930/9WK

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
MOBERLY

G83603

PREPARED BY: B.C., R.I.	SCALE 1:10 000
APPROVED BY: V.L.D.	DATE: NOV. 1983 DRAWING No. GDR-83-287

930/9WK

122°30' 122°28'30" 122°27' 122°25'30" 122°24' 122°22'30"

55°45' 55°44' 55°43' 55°42' 55°40'

MOUNT MONTEITH

FISHER SYNCLINE

FISHER ANTICLINE

FRANK ROY CREEK

BASELINE

MOBERLY RIVER

BICKFORD ANTICLINE

15 000 N 14 000 N 13 000 N 12 000 N 11 000 N 10 000 N 9 000 N

6 178 000 6 176 000 6 174 000 172 000

6174000

6178000

TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
UP. CRET.	Kcr	CRUISER FORMATION Mudstone, siltstone
FORT ST. JOHN GROUP	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
LOWER CRETACEOUS	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones, coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
CRASSIER GROUP	Kdr	DRESSER FORMATION Incomplete cyclothems: discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
BEAUDETTE GROUP	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones, thin sandstones with ironstone banding
TRANSITIONAL	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
JURASSIC-	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location (55°43' A — A')
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

Conglomerate	Claystone/Mudstone
Sandstone	Coal
Siltstone	Silty Claystone
Quartzite	Carbonaceous Claystone

RIVER
STREAM
LAKE
SAND
TREE LINE
FORM LINES 1200 1100
DEPRESSION FORM LINE
SPOT HEIGHT x 1134
MAIN ROAD
SECONDARY ROAD
TRACK
TRAIL
CUT LINE
RAILROAD
BUILDING
COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 1 MILE

0 100 200 400 600 800 1000 METERS

SCALE : 1:10,000

123°00' 122°30' 122°00' 121°30'

56°00' 55°45' 55°30' 55°15' 55°00'

534 GOODRICH INDEX MAP

Appendix A

Pg. GOODRICH 83(2)A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

930/9WL

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
MOBERLY

G83G04

PREPARED BY: M.J.M., E.S. SCALE 1:10 000
APPROVED BY: V.L.D. DATE: NOV. 1983 DRAWING No. GDR-83-288

930/9WL

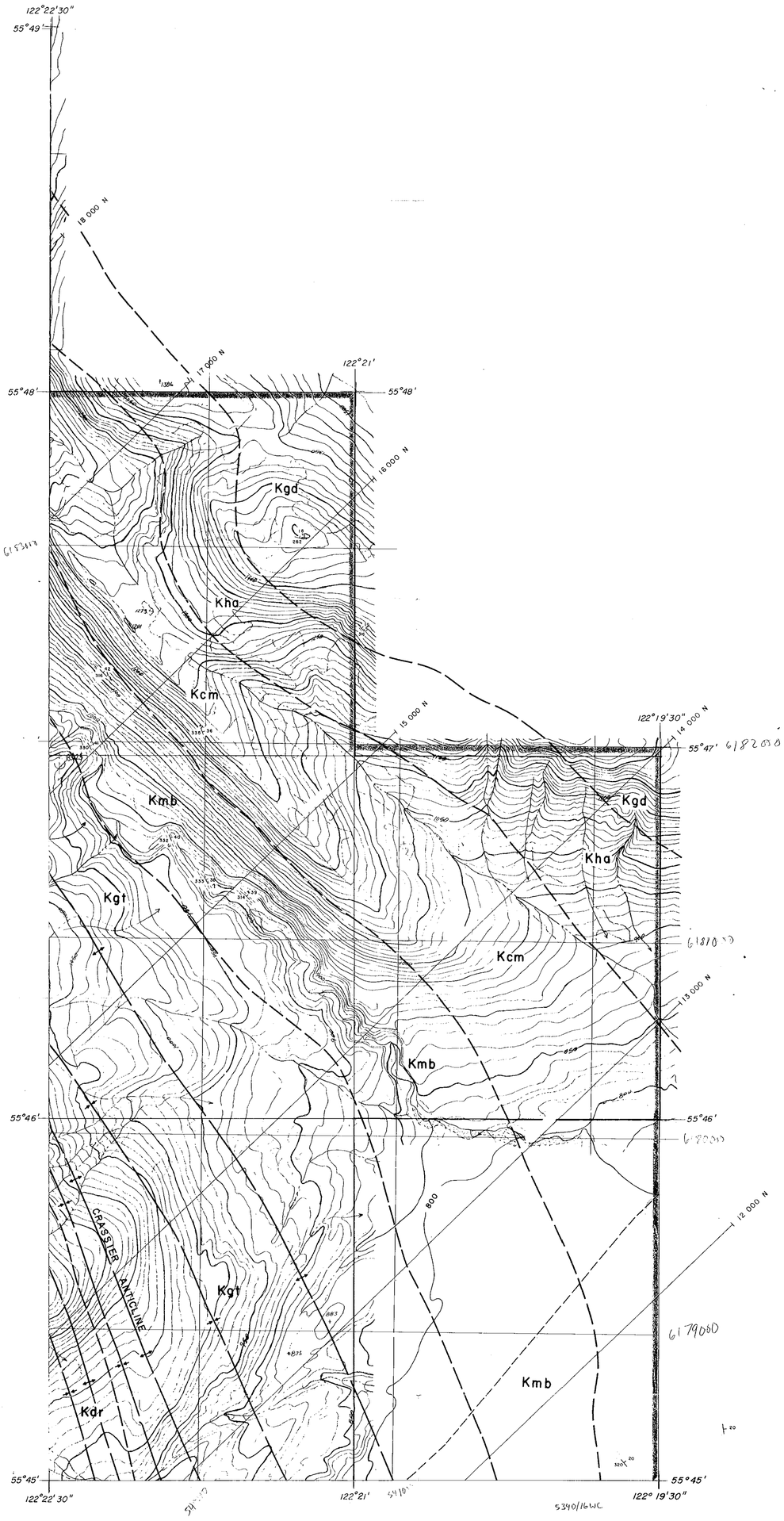


TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
UP. CRET.	Kcr	CRUISER FORMATION Mudstone, siltstone
FORT ST. JOHN GROUP	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
LOWER CRETACEOUS	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
CRASSIER GROUP	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
	Kdr	DRESSER FORMATION Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
TRANSITIONAL	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
BEAUDETTE GROUP	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained, thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
JURASSIC	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, aprox. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- A — A' Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES
- DEPRESSION FORM LINE
- SPOT HEIGHT ×1134
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

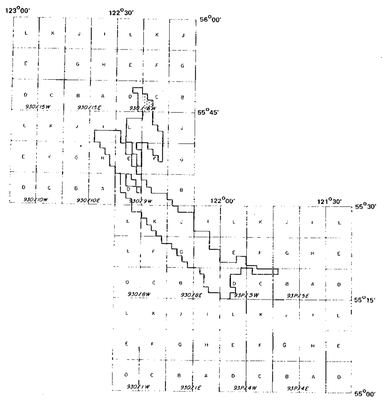
SURVEY NOTE

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

0 1/8 1/4 1/2 3/4 1 MILE

0 100 200 400 600 800 1000 METERS

SCALE 1:10 000



GOODRICH
INDEX MAP

534
Re-Goodrich 83(2)A

Appendix A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Digitized by RS
File: Gmd Gulf
Prop id: 5340/16WC

930/16WC

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
MOBERLY

83605

PREPARED BY: R.I.	SCALE 1:10 000
APPROVED BY: V.L.D.	DATE: NOV. 1983 DRAWING No. GDR-83-285

930/16WC

122°27'
122°25'30"
122°24'
55°50'
55°49'
55°48'
55°47'
55°46'
55°45'
20 000 N
19 000 N
18 000 N
17 000 N
16 000 N
15 000 N
6 184 000N
6 182 000
6 180 000N
1200
1300
1400
1500
1600
1700
1800
1900
Kmb
Kgt
Kcm
Kha
Kgd
Kdr
JKb
JKmc
JKbp
CRASSIER ANTICLINE
FISHER SYNCLINE
FISHER ANTICLINE
SOR-MB-TRC-83001
SOR-MB-TRC-83002
SOR-MB-TRC-82014
SOR-MB-TRC-82015
76-D352
122°28'30"
122°30'
122°22'30"

TABLE OF FORMATIONS

	Q	QUATERNARY Glacial deposits and alluvium
UP. CRET.	Kcr	CRUISER FORMATION Mudstone, siltstone
	Kgd	GOODRICH FORMATION Sandstone, minor conglomerate, siltstone, mudstone
	Kha	HASLER FORMATION Mudstone, siltstone, thin sandstone
FORT ST. JOHN GROUP	Kcm	COMMOTION FORMATION Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
	Kmb	MOOSEBAR FORMATION Mudstones, minor siltstones, marine
	Kbs	BLUESKY Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
LOWER CRETACEOUS	Kgt	GETHING FORMATION Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
CRASSIER GROUP	Kdr	DRESSER FORMATION Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
	JKb	BRENOT FORMATION Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
	JKmc	MONACH FORMATION Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
TRANSITIONAL	JKbp	BEATTIE PEAKS FORMATION Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
BEAUDETTE GROUP	JKmt	MONTEITH FORMATION Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
JURASSIC	Jf	FERNIE FORMATION Dark grey and black shales, mudstones, sandstones, siltstones, marine

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- Cross Section Location (A – A')
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

LEGEND

- RIVER
- STREAM
- LAKE
- SAND
- TREE LINE
- FORM LINES
- DEPRESSION FORM LINE
- SPOT HEIGHT (x 1134)
- MAIN ROAD
- SECONDARY ROAD
- TRACK
- TRAIL
- CUT LINE
- RAILROAD
- BUILDING
- COAL LICENCE 5534

FORM LINE INTERVAL 10 METRES

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

0 1/8 1/4 1/2 3/4 1 MILE
0 100 200 400 600 800 1000 METERS
SCALE : 1:10,000

123°00' 122°30' 56°00' 55°45' 122°00' 121°30' 55°30' 55°15' 55°00'
930/15W 930/15E 930/16W 930/16E 930/9W 930/9E 930/8W 930/8E

534
GOODRICH
INDEX MAP

Appendix A

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Digitized by BS
File = Gulf Gulf
Mapid = 5340/16WD

930/16WD

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
GEOLOGY MAP
MOBERLY

83GC06

PREPARED BY: R.I.	SCALE 1:10 000
APPROVED BY: V.L.D. DATE: NOV. 1983	DRAWING No. GDR-83-290

930/16WD

LEGEND

- Property Boundary
- Coal Seam Subcrop
- Geological Boundary, (defined, approximate)
- Anticline (defined, approximate)
- Syncline (defined, approximate)
- Anticline and Syncline (overturned)
- Fault (defined showing dip, approx. position of fault)
- Normal Fault
- Strike and Dip (bedding, overturned bedding)
- A — A' Cross Section Location
- Monocline
- Bedding (vertical, horizontal)
- Trench Location

LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone

TABLE OF FORMATIONS

Period	Group	Symbol	Formation
		Q	QUATERNARY — Glacial deposits and alluvium
UP. CRET.	FORT ST. JOHN GROUP	Kcr	CRUISER FORMATION — Mudstone, siltstone
LOWER CRETACEOUS	FORT ST. JOHN GROUP	Kgd	GOODRICH FORMATION — Sandstone, minor conglomerate, siltstone, mudstone
LOWER CRETACEOUS	FORT ST. JOHN GROUP	Kha	HASLER FORMATION — Mudstone, siltstone, thin sandstone
LOWER CRETACEOUS	FORT ST. JOHN GROUP	Kcm	COMMOTION FORMATION — Siltstones, sandstones interbedded, claystones of marine origin, COAL at the top member, and conglomerates
LOWER CRETACEOUS	FORT ST. JOHN GROUP	Kmb	MOOSEBAR FORMATION — Mudstones, minor siltstones, marine
LOWER CRETACEOUS	FORT ST. JOHN GROUP	Kbs	BLUESKY — Fine to medium grained sandstones, with or without glauconite, mudstones, thin conglomerate unit at top
LOWER CRETACEOUS	CRASSIER GROUP	Kgt	GETHING FORMATION — Cyclothems; dark grey mudstones, siltstones, carbonaceous, silty, sandy mudstones; coalified plant debris, minor bentonite, black shales, and occasional minor tuffs in upper unit; COAL
LOWER CRETACEOUS	CRASSIER GROUP	Kdr	DRESSER FORMATION — Incomplete cyclothems; discontinuous coal measures in varying thicknesses; medium to very coarse grained sandstones, grits and conglomerates
TRANSITIONAL	CRASSIER GROUP	JKb	BRENOT FORMATION — Lithic "salt and pepper" sandstones, siltstones, mudstones, carbonaceous mudstones, COAL
TRANSITIONAL	BEAUDETTE GROUP	JKmc	MONACH FORMATION — Marine lithic and quartzose sandstones with thick beds of clean coarse grained white quartzites at top. Minor shales, siltstones and sandstones with occasional thin conglomerates
TRANSITIONAL	BEAUDETTE GROUP	JKbp	BEATTIE PEAKS FORMATION — Buff to brownish sandstones, fine to medium grained; thinly bedded black and dark grey shales, silty shales, siltstones; thin sandstones with ironstone banding
TRANSITIONAL	BEAUDETTE GROUP	JKmt	MONTEITH FORMATION — Grey and brown sandstones, fine to medium grained; fine to very coarse grained quartzite. Minor beds of shales, and shales with siltstone and sandstone partings; occasional thin conglomerates
JURASSIC		Jf	FERNIE FORMATION — Dark grey and black shales, mudstones, sandstones, siltstones, marine

534

Pr-Goodrich 83 (2) A (1)

GULF CANADA RESOURCES INC.
Coal Division
CALGARY — ALBERTA

Gulf

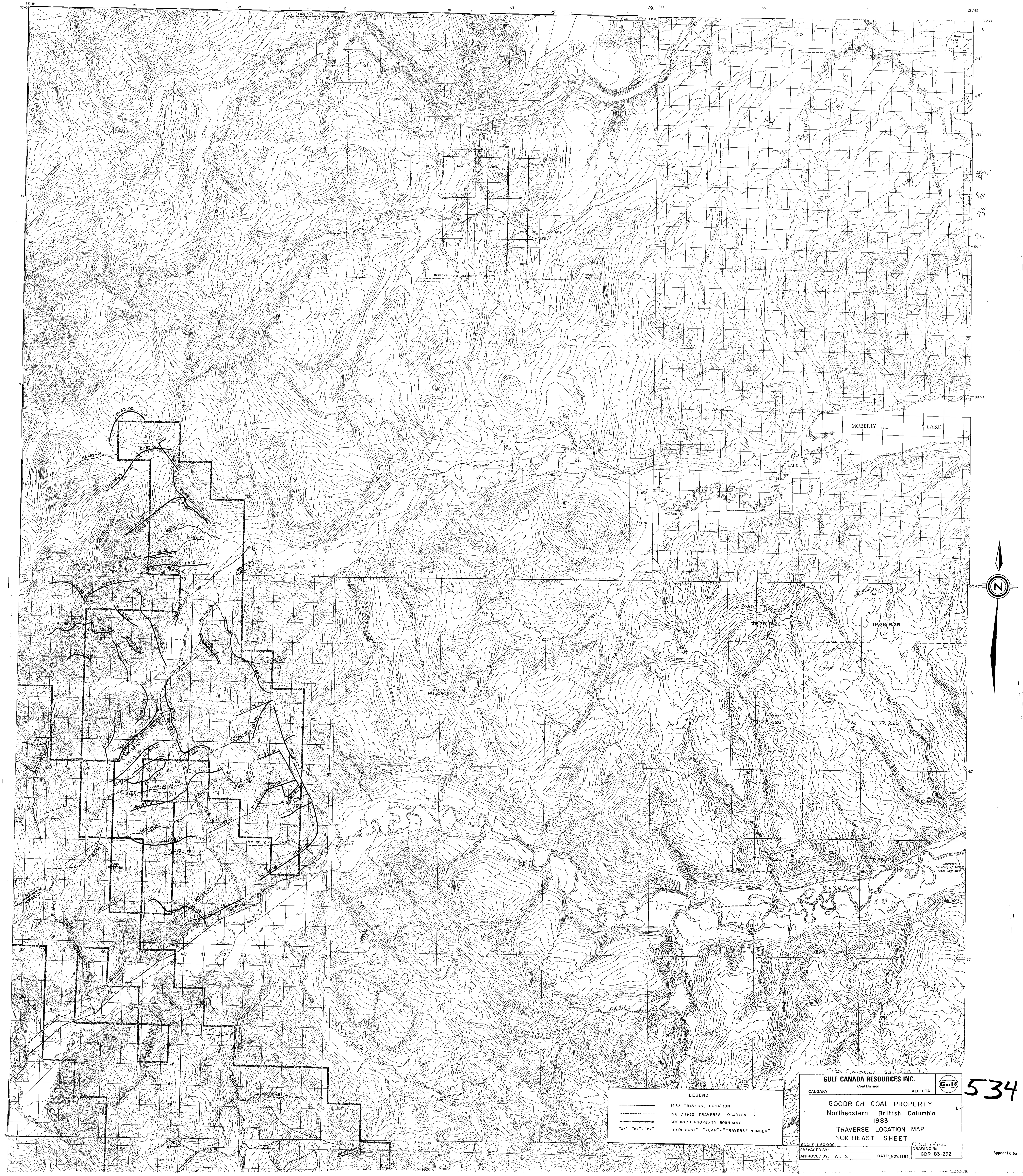
GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
REGIONAL GEOLOGY

DRAWN BY:	DATE:	SCALE: 1 : 50,000
PREPARED BY: 1983 GOODRICH GEOLOGICAL STAFF		DRAWING No. GDR-83-291
APPROVED BY: V. DUFORD	DATE: DEC. 83	

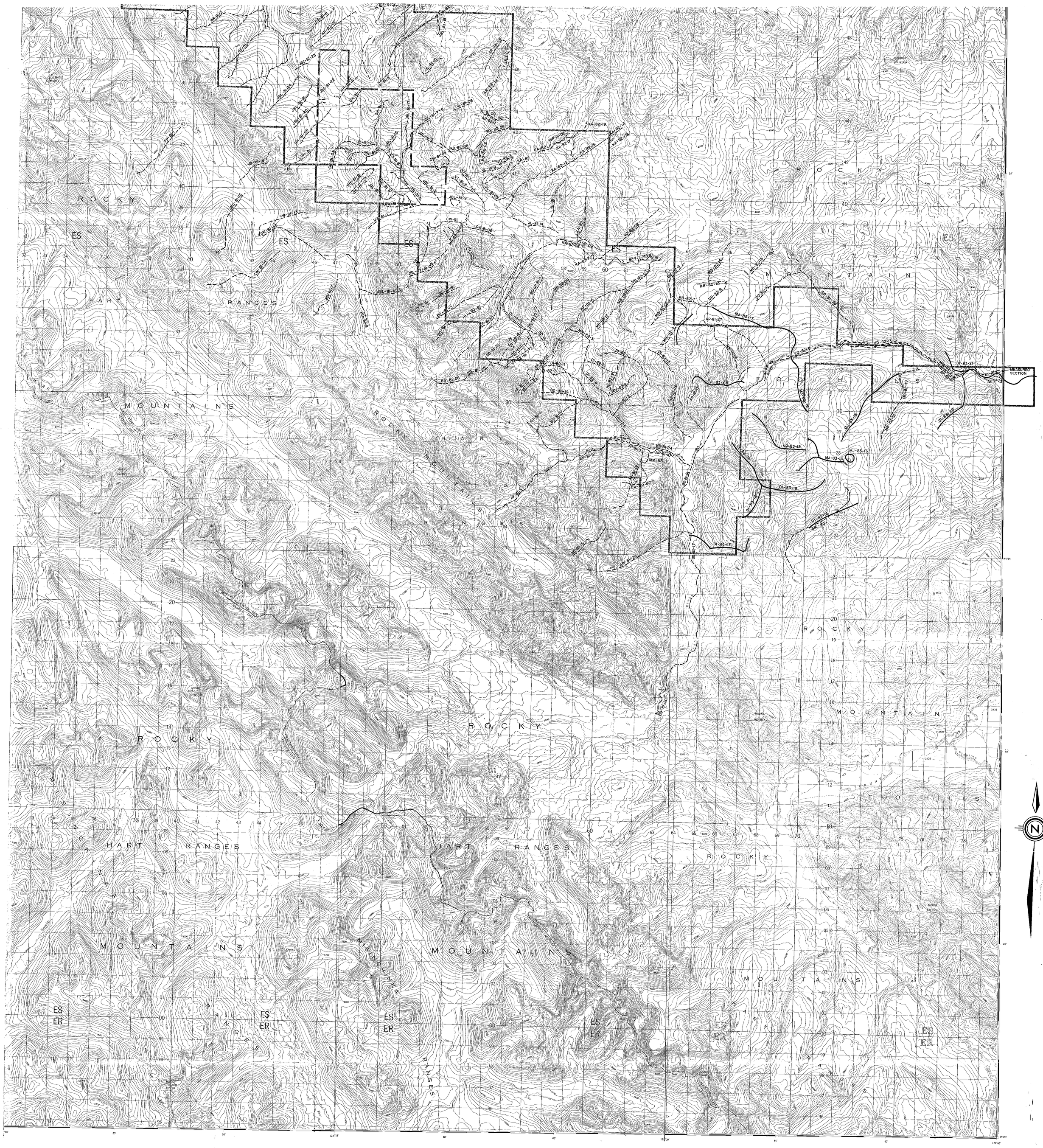
G83 RG01

P/C

Appendix 4



Appendix 5aii



LEGEND

- 1983 TRAVERSE LOCATION
- 1981/1982 TRAVERSE LOCATION
- GOODRICH PROPERTY BOUNDARY
- "XX" - "XX" - "XX" "GEOLOGIST" - "YEAR" - "TRAVERSE NUMBER"

P.R. Goodrich 83(2)A *(1)

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
TRAVERSE LOCATION MAP
SOUTHEAST SHEET

SCALE: 1:50,000
G-83-T(1)
PREPARED BY:
APPROVED BY: V. L. D. DATE: NOV. 1983
DRAWING No. GDR-83-292

Appendix 5a

LEGEND

———	1983 TRAVERSE LOCATION
- - - - - - - -	1981 / 1982 TRAVERSE LOCATION
	GOODRICH PROPERTY BOUNDARY
"XX" - "XX" - "XX"	"GEOLOGIST" - "YEAR" - "TRAVERSE NUMBER"

GR- GOODRICH 83*(2)A*(1) 534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY . ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
TRAVERSE LOCATION MAP
WEST SHEET

SCALE: 1:50,000 G837703
PREPARED BY:
APPROVED BY: V. L. D. DATE: NOV. 1983
DRAWING No. GDR-83-293

MEASURED SECTION
GDR-MB-OTC-83001
N 6163500m E 544270m

TOP OF GETHING FORMATION

SEAM 4
SEAM 5
SEAM 6
SEAM 7
SEAM 8
SEAM 9
SEAM 10
SEAM 11
SEAM 12
SEAM 13
SEAM 14
SEAM 15
(CARBONACEOUS ZONE)
SEAM 16
SEAM 17
SEAM 18
SEAM 19
SEAM 20
SEAM 21
SEAM 22
SEAM 23
SEAM 24
SEAM 25
(CARBONACEOUS ZONE)
SEAM 26

GDR-MB-DDH-81012
N 6170583m E 538839m

TRUE THICKNESS (METRES) | NEUTRON G.R. 0–200 | NEUTRON 0–5000 | DENSITY 1.90–2.80 | DRILLED DEPTHS (METRES)

GDR-MB-DDH-83001
N 6167563m E 54554m

TRUE THICKNESS (METRES) | NEUTRON G.R. 0–240 | NEUTRON −.4–1.6 | DENSITY 1–3 | DRILLED DEPTHS (METRES)

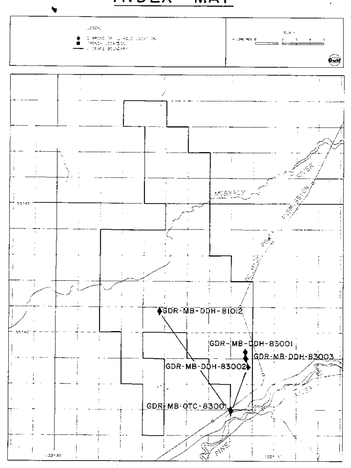
GDR-MB-DDH-83003
N 6167173m E 545267m

TRUE THICKNESS (METRES) | NEUTRON G.R. 0–240 | NEUTRON −.4–1.6 | DENSITY 1–3 | DRILLED DEPTHS (METRES)

GDR-MB-DDH-83002
N 6166589m E 545298m

TRUE THICKNESS (METRES) | NEUTRON G.R. 0–240 | NEUTRON −.4–1.6 | DENSITY 1–3 | DRILLED DEPTHS (METRES)

INDEX MAP



LITHOLOGICAL SYMBOLS

- Conglomerate
- Sandstone
- Siltstone
- Quartzite
- Pyrite
- Claystone/Mudstone
- Coal
- Silty Claystone
- Carbonaceous Claystone
- Coal mixed with Overburden

Appendix B

534

GULF CANADA RESOURCES INC.
Coal Division
CALGARY Pr. Goodrich 83 Dia # (4) BERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
DRILL HOLE CORRELATION CHART
MOBERLY

G83C01

PREPARED BY: B.C., R.I.	SCALE: 1:400	DRAWING No.	
APPROVED BY: V.L.D.	DATE: NOV. 83.	GDR - 83 - 297	

Pre-Goodrich 83C/9

GULF CANADA RESOURCES INC.
Coal Division

534

PREPARED BY: H. BHARADIA , R. INKSTER
APPROVED BY: V. L. DUFORD

SCALE: AS INDICATED
DRAWING No. GDR-83-298

GOODRICH COAL PROPERTY
DRILL HOLE LOG
GDR-MB-DDH-83001

Appendix B

LITHOLOGIC SYMBOLS

SCALE: 1:100 (m) 1:40 (m)

NORTHING: 6167563.20
EASTING: 545266.90

- CONGLOMERATE
- SANDSTONE
- CARBONACEOUS
- SILTSTONE
- COAL
- COAL - THIN BEDS
- OVERBURDEN
- QUARTZ
- PEBBLY SANDSTONE
- MUDSTONE, CLAYSTONE
- BENTONITE
- PYRITE
- CORE LOSS
- PLANT FOSSIL
- SHELL FOSSIL

APPARENT THICKNESS 1:100

TRUE THICKNESS 1:100

SEAM DETAIL 1:40

10	75		
	70		
	75		
	75		
	75		
	73		
20		15.81	SEAM 2
		16.66	COAL/COAL + ROCK 0.61 m / 0.82 m
	75	23.15	SEAM 3
		23.78	COAL / COAL + ROCK 0.60 m / 0.60 m
	68		
	70	29.79	SEAM 4
30	88	30.67	COAL/COAL + ROCK 0.72 m / 0.87 m
	65		
	84		
	76		
	75		
40			
	73		
50			
	71		
	70		
60	70		
	70	70.78	SEAM 5
	60		COAL/COAL + ROCK 5.41 m / 5.96 m
	70		
	70		
	77		
	75		
70	75		
	75		
	70	76.20	
80	71		
	70		
	70		
90	70		
	66		
	45		
	45		
	50		
	50		
	50		
100	30		
	25		
	25		
	25		
104.63	25		

PR. Goodrich 83(3)A

GULF CANADA RESOURCES INC.
Coal Division

534

PREPARED BY: H. BHARADIA, R. INKSTER
APPROVED BY: V.L. DUFORD

SCALE: AS INDICATED
DRAWING No. GDR-83-299

GOODRICH COAL PROPERTY
DRILL HOLE LOG
GDR-MB-DDH-83002

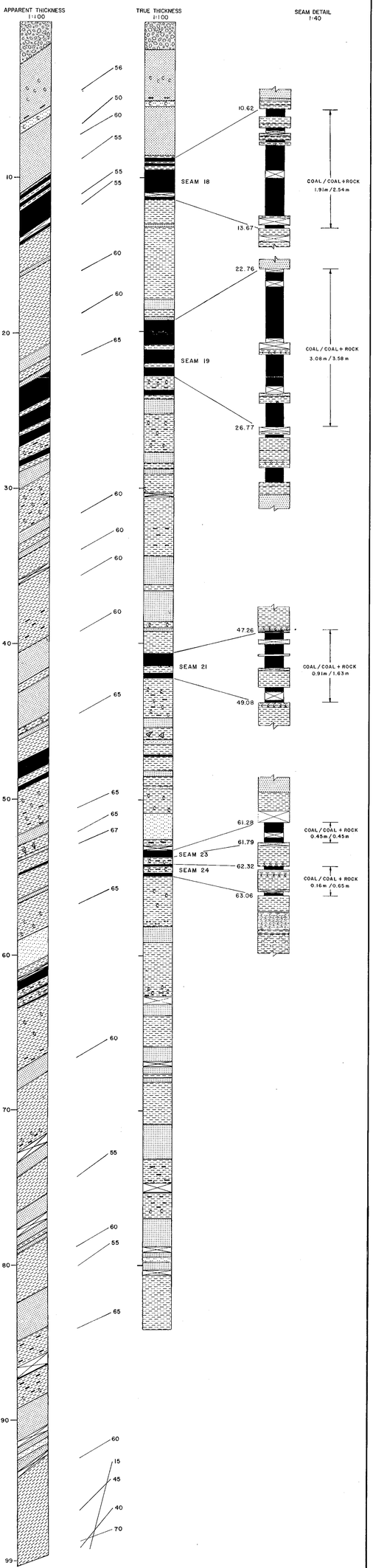
Appendix B

SCALE: 1:100 (0, 5 m) 1:40 (0, 05 m)

NORTHING: 6166589.50
EASTING: 545266.90

LITHOLOGIC SYMBOLS

- CONGLOMERATE
- SANDSTONE
- CARBONACEOUS
- SILTSTONE
- COAL
- COAL - THIN BEDS
- OVERBURDEN
- QUARTZ
- PEBBLY SANDSTONE
- MUDSTONE, CLAYSTONE
- BENTONITE
- PYRITE
- CORE LOSS
- PLANT FOSSIL
- SHELL FOSSIL



Re-Goodrich 85C/14

GULF CANADA RESOURCES INC.
Coal Division

534

PREPARED BY: H. BHARADIA, R. INKSTER
APPROVED BY: V. L. DUFORD
SCALE: AS INDICATED
DRAWING No. GDR-83-300

GOODRICH COAL PROPERTY

Appendix 8

DRILL HOLE LOG
GDR-MB-DDH-83003

LITHOLOGIC SYMBOLS

SCALE 1:100 1:40

NORTHING: 6147177.93
EASTING: 549859.90

- CONGLOMERATE
- SANDSTONE
- CARBONACEOUS MUDSTONE
- MUDSTONE
- COAL - THIN BEDS
- CARBONATE
- GANISTE
- FINELY SANDSTONE
- MUDSTONE, CLAYSTONE
- BENTONITE
- PYRITE
- CORE LOSS
- PLANT FOSSIL
- SHELL FOSSIL

APPARENT THICKNESS 1:100

TRUE THICKNESS 1:100

SEAM DETAIL 1:10

SEAM 9
36.75
43.62
COAL/COAL + ROCK = 1.56m / 1.98m

SEAM 10
103.84
103.56
COAL/COAL + ROCK = 0.27m / 0.37m

CONFIDENTIAL

GOODRICH COAL PROPERTY

GEOLOGICAL REPORT

1983

APPENDIX B

DIAMOND DRILL HOLE

DATA

GDR-MB-DDH-83001

DATA SOURCE SUMMARY

gcri coal division history proj GDR blk MB ds DDH83001

	dy mo yr
start date	27/07/83
end date	31/07/83

contractor	J.T. THOMAS	operator	GULF CANADA
geologist	SWANBERGSON	surveyor	MCELHANNEY

remarks SPUDDED IN BLUESKY FORMATION AND DRILLED UPPER GET HING FORMATION. B.C. MINES TOOK 9 TUFF AND 7 COAL SAMPLES. FULL LOG SUITE ALSO RUN AT A 1:400 SCALE ON ONE PAGE.

gcri coal division location proj GDR blk MB ds DDH83001

province BC elevation (M) 1065.30

licence / lease number 0000007662

1	utm:	zone 10	northing 6167563.20	easting 545153.90		
2	lat-long:	lat 553914	long 1221657			

gcri coal division orientation proj GDR blk MB ds DDH83001

dimensions and orientation:

length (M)	104.63	inclination	60.0	azimuth	251.8
size width	___._	size height			
roof strike		dip	dir		
floor strike		dip	dir		

casing depth (M)	0.61	cement(y,_)	_	plug(Y,_)	Y	piez(Y,_)	_
aquifer depths (M)		____.__		____.__			
lost circ. depths (m)		____.__		____.__			

DEVIATION SURVEY

CENTURY GEOPHYSICAL CORPORATION

* * * * * * * * VERTICAL DEVIATION * * * * * * * * *

COMPU-LOG VSL1 DEVIATION

CLIENT : GULF CANADA RES. INC HOLE ID : GDR-NB-DDH-83-001

LOCATION : GOODRICH-MOBERLY DATE OF LOG : 08-01-83

DATA FROM : VSL2* PROBE : 9055A 0039

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

	DEPTH 00	TRUE DEPTH 00	NORTH DEV 00	EAST DEV 00	DISTANCE 00	AZIMUTH 0	SA 0	SAB 0
	5.00	4.35	-.79	-2.32	2.45	251.0	29.4	251.0
	10.00	8.71	-1.59	-4.64	4.91	251.0	29.4	251.0
	15.00	13.06	-2.36	-6.97	7.36	251.2	29.4	251.6
	20.00	17.42	-3.09	-9.32	9.82	251.5	29.4	252.5
	25.00	21.77	-3.83	-11.65	12.27	251.8	29.3	252.5
	30.00	26.14	-4.56	-13.98	14.71	251.9	29.2	252.4
	35.00	30.51	-5.30	-16.29	17.13	252.0	29.0	252.3
	40.00	34.88	-6.06	-18.59	19.56	251.9	28.8	251.7
	45.00	39.26	-6.81	-20.90	21.98	251.9	28.9	252.0
	50.00	43.63	-7.55	-23.20	24.39	252.0	28.8	252.0
	55.00	48.02	-8.29	-25.48	26.80	252.0	28.7	252.0
	60.00	52.41	-9.05	-27.75	29.19	251.9	28.5	251.6
	65.00	56.80	-9.78	-30.02	31.58	252.0	28.5	252.1
	70.00	61.20	-10.52	-32.28	33.95	251.9	28.3	251.7
	75.00	65.60	-11.28	-34.52	36.32	251.9	28.2	251.4
	80.00	70.01	-12.06	-36.74	38.67	251.8	28.1	250.6
	85.00	74.43	-12.78	-38.98	41.02	251.8	28.0	251.9
	90.00	78.84	-13.52	-41.21	43.37	251.8	27.9	251.5
	95.00	83.26	-14.28	-43.42	45.70	251.8	27.8	251.1
	100.00	87.69	-15.02	-45.63	48.04	251.8	27.7	251.3
TD	104.60	91.76	-15.70	-47.66	50.18	251.8	27.7	251.5

VERTICAL DEVIATION

COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2

CLIENT : GULF CANADA RES. INC
LOCATION : GOODRICH-MOBERLY
HOLE ID : GDR-MB-DDH-83-001
DATE OF LOG : 08-01-83
PROBE : 9055A 0039

SCALE: 5.00 M/DIV
MAG DECL: 25.0
TRUE DEPTH: 91.8 M
AZIMUTH: 251.8
DISTANCE: 50.18 M

+ = 5.0 M INCR
Δ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑

CENTURY GEOPHYSICAL CORP. . PART NO.

DESCRIPTIVE LOG

XXXXX

83/11/28 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	0.00	0.61	0.61			OVERBURDEN	
75	0.61	2.28	1.67			CONGLOMERATE	PBLY,GRAN,PR,LT-DK.GY,MAS,BRKN SUBANGULAR TO SUBROUNDED CHERT PEBBLES, 0.1 CM TO 4.0 CM IN GRAIN SIZE, CHERT UNIFORM, LT TO DK GY, NO DISTINGUISHABL E MATRIX, MNR FE-STN, MNR WTHRING.
* 75	2.28	2.74	0.46			SANDSTONE	FG,VWEL,LT.GY,SLD BDG IS INDISTINCT, MAFICS <= 1%, MNR CA RB WISPS, ALSO COMPOSED OF QTZ, PLAG, O RTHOCLASE.
73	2.74	3.14	0.40			SANDSTONE	SLD AS ABOVE, VBRKN AT BASE, FE STN ALONG M NR FRAC (WEATHERING), MNR CARB WISPS.
72	3.14	3.21	0.07			ROCK LOSS	
* 70	3.21	4.33	1.12			SANDSTONE	FG,VWEL,LT.GY,THNB,SLD VBRKN AT TOP, BLUE-GY INTBDS IN BASAL H ALF UP TO 5.0 CM WIDE (POSSIBLY DUE TO LACK OF ORTHOCLASE).
71	4.33	4.50	0.17			SANDSTONE	FG,MOD,LT.GY,SLD OCC INDISTINCT PBL BANDS INCREASING TO BASE, PBLS SUBROUNDED AND UP TO 0.4 CM IN DIAMETER.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	4.50	4.54	0.04			SANDSTONE	PBLY.GRAN.MOD.M.GY.SLD BDG INDISTINCT, SHARP BASAL CTC, UPPER CTC IS GRAD, TOPS UP, CHT PBLS.
71	4.54	4.70	0.16			SANDSTONE	FG.VWEL.LT.GY.THNB.SLD GY-BLUE AND GY INTBDS (5CM) AS PREVIOUS LY DESCRIBED, MNR CARB WISPS, WTHRING A LONG FRACS.
72	4.70	5.67	0.97			SANDSTONE	SLD AS ABOVE, RARE GRAINS TOWARDS BASE UP T O 0.1 CM.
72	5.67	5.86	0.19			SANDSTONE	PBLY.MOD.LT.GY.VTHNB.SLD MORE GRANULAR TOWARDS BASE, CHT PBLS AN D GRAN IN A FG SS MATRIX, 2 CM PBL BAND IN UPPER PORTION.
73	5.86	5.92	0.06			SANDSTONE	VFG.SLD THN INTBDS OF SS AND SLTY MUDST.
73	5.92	5.98	0.06			MUDSTONE	SLTY.VWEL.DK.GY.VBRKN COALY LAM AND POSSIBLE 2 CM VITRAIN BAN D.
73	5.98	6.22	0.24			ROCK LOSS	
73	6.22	6.67	0.45			ROCK LOSS	

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	6.67	6.83	0.16			MUDSTONE	DK.GY.VTHNB.VBRKN BRIGHT COAL STRGS.
74	6.83	7.23	0.40			MUDSTONE	DK.GY.MAS.VBRKN CARB AT TOP, RUST WTHRING ALONG FRAC, C ALC IN BASAL 15 CM.
74	7.23	7.30	0.07			MUDSTONE	BRKN AS ABOVE, CALC.
* 75	7.30	8.39	1.09			SANDSTONE	VFG.M.GY.VTHNB.SLD SLTY MUDST INTBDS, CALC, MNR COALIFIED PL BLADES AND DEBRIS, MNR SSD, WRMBUR A ND XBDS, TOPS UP, FRAC PLANE ANGLE IS 1 0 FROM VERTICAL.
75	8.39	8.45	0.06			SANDSTONE	FG.M.GY.VTHNB.SLD SLTY MUDST INTBDS, CALC.
75	8.45	8.53	0.08			ROCK LOSS	
76	8.53	9.25	0.72			SANDSTONE	SSD.SLD AS ABOVE, 3 CM MUDST BED IN MIDDLE, MNR APPARENT RIP UP, TOPS UP, CALC.
76	9.25	9.41	0.16			SANDSTONE	SLD AS ABOVE, MNR CALC.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	9.41	9.75	0.34			MUDSTONE	CARB.BLK.BRKN COAL STRGS, MNR LISTRIC SURF.
76	9.75	9.78	0.03		1	COAL LOSS	
76	9.78	9.81	0.03		1	COAL	C-4.BRKN
77	9.81	10.01	0.20		1	ROCK LOSS	
77	10.01	10.07	0.06		1	MUDSTONE	CARB.BLK.VBRKN MNR COAL STRGS.
77	10.07	10.14	0.07		1	COAL	C-5.SLD
77	10.14	10.20	0.06		1	COAL	C-4.VSHRD
77	10.20	10.38	0.18		1	COAL LOSS	
77	10.38	10.46	0.08		1	COAL	C-3.SLD C83-258 B.C. MINES SAMPLE.
77	10.46	10.62	0.16			ROCK LOSS	
77	10.62	10.77	0.15			MUDSTONE	CARB.BLK.SLD BRIGHT COAL BANDS UP TO 1 CM, CORE VBRK N AND ROUNDED AT TOP.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	10.77	11.18	0.41			ROCK LOSS	
78	11.18	11.41	0.23			MUDSTONE	VBRKN AS ABOVE.
78	11.41	11.78	0.37			MUDSTONE	M.GY.SLD SLTY TOWARDS BASE, MNR COALY WISPS, BDG INDISTINCT, CALCT VEINLETS.
* 78	11.78	12.06	0.28			SANDSTONE	FG-.MOD.M.GY.SSD.SLD VTHN INTBDS OF FG AND MG BEDS, CALC.
76	12.06	12.14	0.08			SANDSTONE	SLD AS ABOVE, CALC.
75	12.14	12.30	0.16			SILTSTONE	WEL.M.GY.THNB.SLD CALC.
72	12.30	12.81	0.51			SILTSTONE	WEL.M.GY.THNB.SLD WITH MUDST INTBDS HAVING MNR COAL STRGS , CALC.
* 65	12.81	13.62	0.81			SANDSTONE	FG-.WEL.M.GY.LAM.SLD MNR SSD, MNR CALCT INFILLED FRAC PARALL ELING BDG, CALC.
* 70	13.62	13.81	0.19			MUDSTONE	SLTY.DK.GY.VTHNB.SLD CALC.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	13.81	14.00	0.19			MUDSTONE	DK.GY.SLD SLTY TOWARDS BASE. CALC.
72	14.00	14.07	0.07			SANDSTONE	FG-.M.GY.SSD.SLD SLTY INTBDS, CALC.
* 73	14.07	14.40	0.33			SANDSTONE	SLD AS ABOVE.
73	14.40	15.13	0.73			SILTSTONE	M.GY.VTHNB.SSD.SLD SSY AND MUDST INTBDS, SMALL SCALE ROUND ED RIP UP, CALC.
73	15.13	15.28	0.15			ROCK LOSS	
73	15.28	15.81	0.53			SILTSTONE	SLD AS ABOVE.
73	15.81	15.86	0.05	02181	2	COAL	C-2.SLD
73	15.86	16.03	0.17	02181	2	MUDSTONE	CARB.BLK.SLD ABNT COAL STRGS.
73	16.03	16.15	0.12	02181	2	COAL	C-3.SLD

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	16.15	16.19	0.04	02181	2	TUFF	M.GY.SLD SOFT, B.C. MINES TUFF SAMPLING PROGRAM. SAMPLE # R83-80.
74	16.19	16.21	0.02	02181	2	COAL	C-3.BRKN
74	16.21	16.58	0.37	02181	2	COAL LOSS	
74	16.58	16.66	0.08	02181	2	COAL	C-2.SLD B.C. MINES SAMPLE # C83-259.
74	16.66	16.79	0.13			MUDSTONE	SLTY.M.GY.SLD POORLY BEDDED, SSY AT BASE.
74	16.79	16.89	0.10			MUDSTONE	M.GY.SLD
74	16.89	17.59	0.70			MUDSTONE	M.GY.SLD CALC, AS ABOVE, MNR COALIFIED STRGS & B LEBS, CALCT VEINLETS.
74	17.59	17.75	0.16			ROCK LOSS	
74	17.75	17.88	0.13			ROCK LOSS	CARB

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	17.88	18.04	0.16			MUDSTONE	CARB.BLK.BRKN COAL STRGS.
74	18.04	18.14	0.10			MUDSTONE	M.GY.SLD
74	18.14	18.87	0.73			MUDSTONE	M.GY.SLD AS ABOVE.
74	18.87	19.75	0.88			MUDSTONE	M.GY.SLD SSY INTBDS AT TOP, ELONGATE COAL BLEB, CALCT VEINLETS.
75	19.75	20.36	0.61			MUDSTONE	M.GY.SLD CALCT VEINLETS, CALC.
75	20.36	20.38	0.02			MUDSTONE	CARB.BRKN
75	20.38	20.42	0.04			ROCK LOSS	
75	20.42	20.64	0.22			MUDSTONE	DK.GY.SLD MNR COAL STRGS.
75	20.64	20.83	0.19			MUDSTONE	SLD AS ABOVE, MNR CALCT VEINLETS.
75	20.83	21.04	0.21			MUDSTONE	SLD AS ABOVE.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
75	21.04	21.41	0.37			SANDSTONE	FG.WEL.M.GY.SSD.SLD CALC, SLTY MUDST INTBD.
* 75	21.41	22.43	1.02			SANDSTONE	WEL.LT.GY.THNB.WRMBU.SLD MUDST INTBD AT BASE, TOPS UP, MNR RIP U P CLAST, X BDG, CALC.
73	22.43	22.91	0.48			MUDSTONE	M.GY.THNB.SSD.SLD IRREGULAR SS INTBDS.
73	22.91	22.94	0.03			MUDSTONE	DK.GY.SLD V. SOFT.
73	22.94	23.15	0.21			MUDSTONE	DK.GY.SLD
72	23.15	23.19	0.04	02152	3	COAL LOSS	
72	23.19	23.25	0.06	02152	3	COAL	C-2.VBRKN
72	23.25	23.44	0.19	02152	3	COAL	C-3.BRKN
72	23.44	23.55	0.11	02152	3	COAL	C-6.BRKN FE STN, ALTERED.
71	23.55	23.74	0.19	02152	3	COAL	C-2.VBRKN

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDHB3001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	23.74	23.78	0.04	02152	3	COAL	C-2.BRKN MUDST STRGS AT BASE.
71	23.78	24.02	0.24			MUDSTONE	BLK.SLD MNR COAL STRGS, GRASS BLADES.
70	24.02	24.30	0.28			ROCK LOSS	
70	24.30	24.40	0.10			MUDSTONE	M.GY.MAS.VBRKN
70	24.40	24.62	0.22			MUDSTONE	M.GY.MAS.SLD
69	24.62	24.94	0.32			SILTSTONE	M.GY.SSD.SLD CALC, SS INTBDS AT TOP.
* 68	24.94	25.79	0.85			MUDSTONE	M.GY.SLD RARE SLTY LAM GAVE BCA, CALC AT TOP.
68	25.79	25.86	0.07			COAL	VBRKN FE-STN, MNR MUDST INTBD.
68	25.86	25.90	0.04			COAL LOSS	
69	25.90	26.51	0.61			MUDSTONE	DK.GY.SLD COAL STRGS AT TOP.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
69	26.51	26.53	0.02			COAL	C-1.VBRKN B.C. MINES SAMPLE # C83-260.
69	26.53	26.61	0.08			ROCK LOSS	
69	26.61	26.94	0.33			MUDSTONE	SLTY.GY.SLD CORE ROTATED.
70	26.94	27.19	0.25			MUDSTONE	DK.GY.SLD SLTY AT TOP, LARGE COALIFIED FRAG CUTTI NG BDG (.3 CM THICK).
70	27.19	27.41	0.22			SANDSTONE	FG-.WEL.LT.GY.THNB.SSD.SLD
* 70	27.41	27.67	0.26			MUDSTONE	SLTY.M.GY.SLD
77	27.67	29.03	1.36			SILTSTONE	M.GY.SLD CALCT CEMENT, SSY INTBDS, MNR CALCT VEI NLETS, MNR SOFT MUDST BAND IN MIDDLE.
83	29.03	29.12	0.09			SANDSTONE	FG.WEL.M.GY.THNB.SLD SLTY INTBDS.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
84	29.12	29.51	0.39			SANDSTONE	FG-.WEL.LT-M.GY.LAM.SLD COAL FLECKS & STRGS. CORE ROTATED AT TO . P.
87	29.51	29.70	0.19			MUDSTONE	SLTY.SLD FE STN & HEAT ALTERED, ELONGATE VUGS IN MIDDLE, BRKN AT BASE.
* 88	29.70	29.79	0.09			SANDSTONE	MG.MOD.LT.GY.THNB.SLD C WISPS.
87	29.79	29.82	0.03	02153	4	COAL	C-3.SLD UPPER CTC IRREGULAR.
87	29.82	29.90	0.08	02153	4	COAL	C-4.SLD
86	29.90	29.93	0.03	02153	4	COAL	C-2.SLD
85	29.93	30.01	0.08	02153	4	COAL	C-4.SLD
85	30.01	30.04	0.03	02153	4	COAL	C-1.SLD
84	30.04	30.08	0.04	02153	4	COAL	C-2.SLD

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
83	30.08	30.27	0.19	02153	4	COAL	C-1.SLD
81	30.27	30.30	0.03	02153	4	COAL	C-2.SLD
81	30.30	30.33	0.03	02153	4	COAL	C-1.SLD
81	30.33	30.37	0.04	02153	4	COAL	C-4.SLD
79	30.37	30.52	0.15	02153	4	ROCK LOSS	
78	30.52	30.67	0.15	02153	4	COAL LOSS	
76	30.67	30.71	0.04			MUDSTONE	BLK.VBRKN ABNT COALY STRGS AT TOP.
76	30.71	30.80	0.09			MUDSTONE	CARB.BLK.VBRKN
74	30.80	30.95	0.15			MUDSTONE	BLK.SLD COALIFIED PL DEBRIS.
* 65	30.95	32.30	1.35			MUDSTONE	CARB.M.GY.SLD FG SSY INTBDS IN MIDDLE, CORE VBRKN AT BASE.

* DENOTES MEASURED BCA

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	32.30	32.62	0.32			ROCK LOSS	
73	32.62	33.10	0.48			MUDSTONE	SLTY.DK.GY.SLD CALC.
75	33.10	33.17	0.07			MUDSTONE	LT-M.GY.SLD MNR COALY STRG, HARD & DENSE.
75	33.17	33.18	0.01			COAL	C-1.SLD
76	33.18	33.56	0.38			MUDSTONE	M.GY.SLD CALCT VEINLETS, MNR COALY WISPS.
79	33.56	34.11	0.55			MUDSTONE	M.GY.SLD CALCT VEINLETS AT TOP, CORE VBRKN AT BA SE.
* 84	34.11	35.03	0.92			SANDSTONE	FG.WEL.M.GY.THNB.SSD.SLD ,SLTST INTBDS.
83	35.03	35.12	0.09			SILTSTONE	M.GY.SLD MNR PL FRAGS, CALC.
82	35.12	35.78	0.66			SILTSTONE	SLD AS ABV.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
81	35.78	36.21	0.43			SANDSTONE	FG.VWEL.LT.GY.MAS.SSD.SLD MNR COALY DEBRIS UP TO .1 CM, JOINTING AT 80 DEGREES.
80	36.21	36.22	0.01			TUFF	B.C. MINES TUFF SAMPLE; R83-87.
* 80	36.22	36.35	0.13			MUDSTONE	CARB.BLK.SLD
80	36.35	36.38	0.03			COAL	C-3.SLD B.C. MINES SAMPLE C83-261.
80	36.38	36.44	0.06			COAL	C-4.SLD
79	36.44	36.57	0.13			COAL LOSS	
79	36.57	36.65	0.08			MUDSTONE	CARB.BLK.SLD COALY STRGS THROUGHOUT.
79	36.65	36.67	0.02			MUDSTONE	CARB.BLK.VBRKN
78	36.67	37.21	0.54			MUDSTONE	SLTY.M.GY.SLD MNR COALIFIED BLEBS, CALC AT BASE.
76	37.21	37.81	0.60			MUDSTONE	SLTY.M.GY.SLD AS ABV, CALC.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	37.81	38.28	0.47			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD SLTY INTBDS , CALCT VEINLETS IN MIDDLE, CALC.
* 72	38.28	39.34	1.06			SANDSTONE	FG.WEL.LT-M.GY.LAM.WRMBU.SLD AS ABV, TOPS UP, X-BDG, SSD, CALC.
72	39.34	39.69	0.35			SANDSTONE	FG.WEL.LT-M.GY.LAM.SLD AS ABV, CALC.
72	39.69	40.24	0.55			SANDSTONE	SSD.SLD AS ABV, CALC.
72	40.24	40.69	0.45			MUDSTONE	SLTY.M.GY.SLD SSY TOWARDS BASE, JOINT AT 85 DEGREES. CALC.
72	40.69	41.10	0.41			SANDSTONE	SLTY.LT-M.GY.SSD.SLD (DEWATERING? TOPS UP), CALC.
72	41.10	41.29	0.19			SILTSTONE	M.GY.SLD CALC.
72	41.29	42.46	1.17			MUDSTONE	M.GY.SLD SLTY AT TOP, CALC.
73	42.46	43.34	0.88			MUDSTONE	M.GY.SLD MNR COALY WISPS AT BASE, CALC.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	43.34	44.07	0.73			MUDSTONE	M.GY.SLD CALC, MNR SSY LAYER IN MIDDLE.
73	44.07	44.15	0.08			SANDSTONE	LT.GY.SLD MNR COALY WISPS, CALC, UNDULATING BASAL CTC.
73	44.15	44.63	0.48			MUDSTONE	
73	44.63	44.71	0.08			BENTONITE	LT.GY.SLD SOAPY, B.C. MINES SAMPLE # R-83-90.
73	44.71	44.79	0.08			MUDSTONE	M.GY.SLD CALC.
73	44.79	44.84	0.05			MUDSTONE	M.GY.SLD CALC.
73	44.84	44.91	0.07			TUFF	BF.SLD SOFT, SOMEWHAT SOAPY, B.C. MINES TUFF SAMPLE # R-83-81.
73	44.91	44.95	0.04			MUDSTONE	CARB.BLK.BRKN BRIGHT COALY STRGS.
73	44.95	45.05	0.10			MUDSTONE	BLK.SLD

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	45.05	45.09	0.04			COAL	C-3.BRKN
73	45.09	45.25	0.16			COAL LOSS	
73	45.25	45.36	0.11			MUDSTONE	BLK.SLD MNR COAL STRGS.
73	45.36	45.42	0.06			COAL	C-5.SLD BRKN AT BASE.
73	45.42	45.44	0.02			COAL LOSS	
* 73	45.44	45.53	0.09			TUFF	CARB.M.GY.SLD SOFT, B.C. MINES TUFF SAMPLE R83-82.
73	45.53	45.56	0.03			COAL	C-4.SLD
73	45.56	45.80	0.24			TUFF	LT.GY.SLD SOFT, B.C. MINES TUFF SAMPLE R83-83.
73	45.80	45.81	0.01			MUDSTONE	CARB.BLK.SLD
73	45.81	45.87	0.06			COAL	C-1.BLK.SLD B.C. MINES SAMPLE # C83-255.
73	45.87	45.93	0.06			COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
73	45.93	46.07	0.14			ROCK LOSS	
73	46.07	46.11	0.04			MUDSTONE	CARB.BLK.BRKN MNR COAL STRGS.
73	46.11	46.50	0.39			MUDSTONE	M-DK.GY.THNB.SLD SLTY INTBDS TOWARDS BASE.
73	46.50	46.65	0.15			SILTSTONE	M.GY.THNB.SLD
73	46.65	47.70	1.05			SANDSTONE	FG-.WEL.LT-M.GY.SLD CALC, MNR COALIFIED BLEBS IN MIDDLE, CO ARSENING TO BASE, MNR X-BDG, TOPS UP, P OSSIBLE LARGE SCALE X-BDG NEAR BASE.
72	47.70	48.07	0.37			SANDSTONE	MG.WEL.LT.GY.THNB.SLD CALC, MNR CALCT VEINLETS.
72	48.07	48.84	0.77			SANDSTONE	SLD AS ABV, JOINT AT 70 DEG,; CALCT INFILLE D.
72	48.84	48.92	0.08			SANDSTONE	MOD.M.GY.SLD CORE BRKN AT TOP, ABNT COAL STRGS RIMME D BY CALCT.
72	48.92	49.79	0.87			SANDSTONE	VFG-.M.GY.LAM.SSD.SLD SLTY MUDST INTBDS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	49.79	50.29	0.50			SANDSTONE	SLD AS ABV.
72	50.29	50.41	0.12			MUDSTONE	SLTY.M.GY.SLD MNR SSY INTBDS.
71	50.41	51.84	1.43			SANDSTONE	FG.LT-M.GY.VTHNB.SSD.SLD SLTY MUDST INTBDS, MNR CALCT VEINING IN MIDDLE.
71	51.84	51.90	0.06			SANDSTONE	SLD AS ABV.
* 71	51.90	53.45	1.55			SANDSTONE	FG.LT-M.GY.SSD.SLD CALC, SLTY MUDST INTBDS, JOINTING AT 75
71	53.45	53.89	0.44			SANDSTONE	FG.LT-M.GY.SSD.SLD SLTY MUDST INTBDS.
71	53.89	54.91	1.02			SANDSTONE	SLD AS ABV.
70	54.91	56.06	1.15			SANDSTONE	SLD AS ABV.
70	56.06	56.50	0.44			SANDSTONE	SLD AS ABV.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

	BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	70	56.50	56.89	0.39			SANDSTONE	SLD AS ABV, INCREASING IN MUDST CONTENT TOW ARDS BASE.
*	70	56.89	57.97	1.08			MUDSTONE	DK.GY.SLD MNR CALCT VEINLETS, SSY INTBD IN UPPER MIDDLE, RARE COAL STRG AT TOP.
	70	57.97	58.07	0.10			MUDSTONE	DK.GY.SLD CALC.
	70	58.07	58.18	0.11			SANDSTONE	FG.M.GY.VTHNB.SSD.SLD SLTY INTBDS.
	70	58.18	58.27	0.09			SANDSTONE	SLD AS ABV, INCREASING MUDST TOWARDS BASE.
	70	58.27	59.61	1.34			MUDSTONE	SLTY.DK.GY.THNB.SLD FG SSY INTBDS UP TO 8 CM.
	70	59.61	59.94	0.33			MUDSTONE	SLD AS ABV.
*	70	59.94	60.17	0.23			SANDSTONE	FG.LT-M.GY.LAM.SLD
	70	60.17	60.33	0.16			MUDSTONE	M.GY.THNB.SLD MNR SLTY INTBDS.

* DENOTES MEASURED BCA

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	60.33	61.04	0.71			MUDSTONE	DK.GY.SLD CALC.
71	61.04	61.21	0.17			MUDSTONE	SLD AS ABV.
71	61.21	61.24	0.03			COAL	C-1.BRKN
71	61.24	61.31	0.07			COAL LOSS	
* 72	61.31	62.20	0.89			MUDSTONE	DK.GY.SLD RARE COAL STRGS AT TOP & BOTTOM, SLTY I NTBDS IN MIDDLE.
69	62.20	62.47	0.27			ROCK LOSS	
67	62.47	62.79	0.32			MUDSTONE	DK.GY.SLD CALC, CORE BRKN AT TOP.
65	62.79	62.89	0.10			ROCK LOSS	
65	62.89	63.08	0.19			MUDSTONE	DK.GY.BRKN CALC, LISTRIC SURF, COALY BLEBS AT BASE
62	63.08	63.60	0.52			MUDSTONE	CARB.DK.GY.SLD COALY LNS AT BASE.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 60	63.60	63.90	0.30			SANDSTONE	FG-.M.GY.VTHNB.SLD COALY WISPS.
61	63.90	63.97	0.07			MUDSTONE	DK.GY.SLD
61	63.97	64.24	0.27			MUDSTONE	SLD AS ABV.
62	64.24	64.28	0.04			MUDSTONE	CARB.BLK.SLD CALCT VEINING AT BASE.
62	64.28	64.33	0.05			COAL	C-4.SLD
62	64.33	64.37	0.04			TUFF	LT.GY.SLD TUFFACEOUS SLTST, IRREGULAR COALY LNS. B.C. MINES TUFF SAMPLE #R83-84.
63	64.37	64.64	0.27			COAL LOSS	
64	64.64	64.74	0.10			COAL	C-2.VBRKN B.C.MINES SAMPLE #C83-256.
64	64.74	65.03	0.29			ROCK LOSS	
66	65.03	65.39	0.36			MUDSTONE	SLTY.M.GY.SLD MNR CARB BAND AT TOP.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
67	65.39	65.58	0.19			MUDSTONE	SLD AS ABV, NON CALC.
67	65.58	65.61	0.03			MUDSTONE	SLD AS ABV, NON CALC.
* 70	65.61	67.18	1.57			SANDSTONE	MG.WEL.LT.GY.THNB.SLD RARE SLTY INTBDS IN TOP 20CM, BCA CHANGES TO 50 OVER A 25CM THKNESS NEAR BASE AND IS CONSIDERED LOCALIZED, MNR CALCT VEINS CUTTING AND FOLLOWING BDG NEAR BASE, RARE ROUNDED RIP-UP UP TO 1CM IN LENGTH.
72	67.18	67.43	0.25			SANDSTONE	MG.WEL.LT.GY.THNB.SLD MNR SLTY MUDST, SUB ROUNDED RIP UP, CALC.
* 73	67.43	68.73	1.30			SANDSTONE	MG.WEL.LT.GY.THNB.SLD CALC, 1CM CALCT VEIN IN MIDDLE ALONG BDG, MNR CALCT VEINING AT TOP.
76	68.73	68.80	0.07			SANDSTONE	MG.WEL.LT.GY.THNB.SLD
* 77	68.80	69.00	0.20			SANDSTONE	SLD AS ABV, ABNT COALY LAMS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	69.00	69.56	0.56			SANDSTONE	MG.WEL.M.GY.THNB.SLD MNR COAL STRGS IN MIDDLE, GOOD POROSITY , NON CALC.
75	69.56	69.99	0.43			SANDSTONE	SLD AS ABV.
75	69.99	70.00	0.01			TUFF	LT.GY.SLD SOFT AND WAXY. B.C. MINES TUFF SAMPLE # R83-85.
* 75	70.00	70.04	0.04	02154		TUFF	LT.GY.SLD SOFT AND WAXY.
75	70.04	70.13	0.09	02155	5	COAL	C-4.SLD
75	70.13	70.19	0.06	02155	5	COAL	C-3.VBRKN
75	70.19	70.24	0.05	02155	5	COAL LOSS	
75	70.24	70.28	0.04	02155	5	COAL	C-3.VBRKN
75	70.28	70.58	0.30	02156	5	MUDSTONE	BLK.SLD CARB AT TOP.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
76	70.58	70.78	0.20	02156	5	MUDSTONE	CARB.BLK.BRKN LISTRIC SURF, MNR COAL STRGS.
76	70.78	70.87	0.09	02157	5	COAL	C-4.BRKN
76	70.87	71.24	0.37	02157	5	COAL LOSS	
76	71.24	71.36	0.12	02157	5	COAL	C-3.VBRKN CORE PULVERIZED.
76	71.36	71.40	0.04	02157	5	COAL	C-3.SLD
76	71.40	71.45	0.05	02157	5	COAL	C-3.VBRKN
77	71.45	71.81	0.36	02157	5	COAL LOSS	
77	71.81	71.99	0.18	02157	5	COAL	C-3.VBRKN CORE PULVERIZED AT TOP.
77	71.99	72.02	0.03	02157	5	COAL	C-3.SLD
* 77	72.02	72.07	0.05	02158	5	TUFF	LT.GY.SLD SOFT & WAXY, COALY WISPS. B.C. MINES TUFF SAMPLE #R83-86.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
77	72.07	72.08	0.01	02159	5	COAL	C-4.SLD
77	72.08	72.09	0.01	02159	5	TUFF	LT.GY.SLD
77	72.09	72.31	0.22	02159	5	COAL	C-2.SLD
77	72.31	72.51	0.20	02159	5	COAL	C-3.BRKN CORE INTACT BUT VERY BROKEN.
76	72.51	73.25	0.74	02159	5	COAL	C-4.SLD LACKS GOOD CLEATING, COAL VERY ASHY.
76	73.25	73.37	0.12	02159	5	COAL LOSS	
76	73.37	73.40	0.03	02159	5	COAL	C-3.VBRKN
75	73.40	74.11	0.71	02159	5	COAL	C-4.SLD LACKS GOOD CLEATING, VERY ASHY, FLAKEY.
75	74.11	74.80	0.69	02159	5	COAL	C-4.SLD LACKS GOOD CLEATING, VERY ASHY, FLAKEY.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
74	74.80	75.50	0.70	02159	5	COAL	C-4.SLD
74	75.50	75.65	0.15	02159	5	COAL	C-4.SLD
74	75.65	75.75	0.10	02159	5	COAL	C-3.SLD MNR CALCT VEINLETS.
73	75.75	75.97	0.22	02159	5	COAL	C-4.SLD ASHY & FLAKEY.
73	75.97	75.98	0.01	02159	5	TUFF	LT.GY.SLD SOFT, WAXY, IRREGULAR POD SHAPED, V POR OUS, CALC.
73	75.98	76.20	0.22	02159	5	COAL	C-4.SLD
73	76.20	76.36	0.16	02160		ROCK LOSS	
73	76.36	76.46	0.10	02160		MUDSTONE	DK.GY.SLD CORE BROKEN AT TOP W OCC C STGS,CALC IN BASAL HALF

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
72	76.46	77.62	1.16			MUDSTONE	DK.GY.SLD CORE VBRKN AT TOP W OCC COAL STRGS, CAL C IN BASAL HALF.
72	77.62	77.79	0.17			MUDSTONE	SLTY.DK.GY.SLD CALC.
71	77.79	78.54	0.75			MUDSTONE	SLTY.M.GY.THNB.SSD.SLD VFG SS INTBDS, CALC.
71	78.54	78.68	0.14			MUDSTONE	DK.GY.SLD AS ABV, COALY STRGS.
71	78.68	78.81	0.13			MUDSTONE	CARB.BLK.SLD
71	78.81	79.12	0.31			MUDSTONE	SLD AS ABV, CALC, CALCT VEINING.
70	79.12	79.31	0.19			ROCK LOSS	
* 70	79.31	80.02	0.71			SANDSTONE	FG.WEL.LT-M.GY.SLD SLTY INTBDS, CALC, CALCT VEINED, LISTRI C SURF AT BASE, CORE VBRKN AT BASE, CUT & FILL (TOPS UP). BRKN AT TOP.
70	80.02	80.22	0.20			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	80.22	80.86	0.64			MUDSTONE	BLK.SLD CORE BRKN AT TOP, MNR LISTRIC SURF, CALC AT BASE.
71	80.86	80.98	0.12			MUDSTONE	DK.GY.SLD RARE COALY WISPS.
71	80.98	81.44	0.46			MUDSTONE	DK.GY.SLD CALC, CALCT VEINING AT BASE.
* 71	81.44	82.35	0.91			MUDSTONE	SLTY.M.GY.SLD RARE FG SS INTBDS, CALC.
71	82.35	82.65	0.30			MUDSTONE	SLD AS ABV.
71	82.65	82.87	0.22			MUDSTONE	DK.GY.SLD
71	82.87	83.10	0.23			MUDSTONE	BLK.SLD
71	83.10	83.23	0.13		6	COAL	C-3.SLD B.C. MINES SAMPLE # C83-762.
71	83.23	83.25	0.02		6	MUDSTONE	SLTY.SLD DISEMMINATED PYRITE THROUGHOUT, CARB.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
71	83.25	83.36	0.11		6	COAL	C-3.SLD
71	83.36	83.48	0.12		6	COAL	C-3.VBRKN PULVERIZED, LISTRIC SURF.
71	83.48	83.50	0.02		6	MUDSTONE	CARB.M.GY.BRKN COAL STRGS.
71	83.50	83.54	0.04		6	COAL	C-2.VBRKN
71	83.54	83.64	0.10			MUDSTONE	DK.GY.VBRKN MNR COAL STRGS, CALC.
71	83.64	83.69	0.05			MUDSTONE	DK.GY.SLD CALC.
71	83.69	83.81	0.12			ROCK LOSS	
71	83.81	83.94	0.13			MUDSTONE	CARB.BLK.SLD CORE VBRKN AT TOP W MNR CALCT VEINLETS, CALC.
70	83.94	84.83	0.89			MUDSTONE	SLTY.DK.GY.SSD.SLD CALC.
70	84.83	85.09	0.26			MUDSTONE	M.GY.SLD

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	85.09	85.46	0.37			MUDSTONE	SLTY.M.GY.SLD CORE BRKN AT BASE, CALC.
70	85.46	85.76	0.30			MUDSTONE	SLD AS ABV.
* 70	85.76	86.47	0.71			SANDSTONE	FG.WEL.LT.GY.XBDG.SLD MNR CALCT VEINS, PARTIAL WRMBUR (SHOWS TOPS UP), CALC.
70	86.47	86.59	0.12			MUDSTONE	DK.GY.SLD
70	86.59	86.83	0.24			MUDSTONE	SLTY.M.GY.SLD SSY INTBDS IN MIDDLE, CALC.
70	86.83	86.95	0.12			MUDSTONE	SLTY.M.GY.SLD
70	86.95	87.66	0.71			MUDSTONE	SLD AS ABV.
70	87.66	88.47	0.81			MUDSTONE	DK.GY.SLD
70	88.47	88.83	0.36			MUDSTONE	SLD AS ABV.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
70	88.83	89.09	0.26			MUDSTONE	SLTY.DK.GY.SLD CALC.
70	89.09	89.70	0.61			SANDSTONE	MG.WEL.LT-M.GY.THNB.SSD.SLD MUDST INTBDS AT TOP & BOTTOM W CALCT VE INS IN UPPER HALF,.CALC.
70	89.70	89.97	0.27			MUDSTONE	SLD MNR SLTY INTBDS, CALC.
* 70	89.97	90.17	0.20			MUDSTONE	SLD AS ABV.
70	90.17	90.51	0.34			MUDSTONE	DK.GY.SLD CALC, MNR COAL STRGS W MNR SLTY LNS.
70	90.51	90.58	0.07			ROCK LOSS	
69	90.58	90.65	0.07			COAL LOSS	
69	90.65	90.96	0.31			MUDSTONE	DK.GY.SLD NON CALC.
69	90.96	91.46	0.50			MUDSTONE	DK.GY.XBDG.SLD SSY INTBDS IN UPPER HALF, TOPS UP.
68	91.46	92.17	0.71			MUDSTONE	DK.GY.SLD SSY INTBDS, NON CALC.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
68	92.17	92.20	0.03			COAL	C-4.BRKN
67	92.20	93.01	0.81			MUDSTONE	DK.GY.SLD NON CALC.
67	93.01	93.10	0.09			MUDSTONE	DK.GY.SLD NON CALC.
67	93.10	93.14	0.04			MUDSTONE	CARB.BLK.VBRKN LISTRIC SURF, COAL STRGS.
66	93.14	93.99	0.85			MUDSTONE	M.GY.BRKN MNR COAL BLEBS IN MIDDLE, CALCT VEINS AT BASE.
66	93.99	94.01	0.02			MUDSTONE	CARB.BLK.SLD MNR CALCT VEINS.
* 66	94.01	94.06	0.05			COAL	C-4.VBRKN
64	94.06	94.45	0.39			MUDSTONE	SLD VFG SS INTBDS IN MIDDLE, MNR COAL STRGS & MNR CALCT VEINLETS.
61	94.45	94.76	0.31			MUDSTONE	M.GY.SSD.SLD SLTST INTBDS, CALC.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	94.76	95.07	0.31			MUDSTONE	DK.GY.SLD CALCT VEINS AT BASE.
57	95.07	95.09	0.02			COAL	C-3.VBRKN
56	95.09	95.25	0.16			MUDSTONE	DK.GY.SLD ABNT CALCT VEINLETS.
54	95.25	95.68	0.43			MUDSTONE	SLD SLTY AT TOP, HAIRLINE FRAC IS DISPLACIN G CALCT VEINLETS, JOINTING AT 70.
51	95.68	95.89	0.21			MUDSTONE	DK.GY.SLD CALCT VEINLETS AT BOTTOM.
50	95.89	95.98	0.09			SANDSTONE	MG.WEL.M.GY.SLD CALCT VEINLETS.
50	95.98	96.00	0.02			MUDSTONE	DK.GY.VBRKN LISTRIC SURF.
49	96.00	96.11	0.11			ROCK LOSS	
47	96.11	96.47	0.36			MUDSTONE	DK.GY.BRKN CORE VBRKN AT TOP, NON CALC, LISTRIC SU RF, MNR CALCT VEINS, SLTY TOWARDS BASE.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 45	96.47	96.60	0.13			SANDSTONE	VFG.WEL.M.GY.LAM.SLD SLTY INTBDS.
* 46	96.60	96.72	0.12			SANDSTONE	SLD AS ABV.
48	96.72	97.52	0.80			SANDSTONE	SLD AS ABV, CALC.
* 50	97.52	97.63	0.11			SANDSTONE	SLD AS ABV, CALC.
50	97.63	97.79	0.16			MUDSTONE	DK.GY.SLD LISTRIC SURF AT TOP, MNR CALCT VEINING, COALY BLEBS AT BASE, CALC.
50	97.79	98.13	0.34			COAL	C-2.SLD CORE BRKN AT BASE, LISTRIC SURF, B.C. M INES SAMPLE #C83-263.
50	98.13	98.15	0.02			COAL LOSS	
50	98.15	98.42	0.27			MUDSTONE	DK.GY.BRKN CARB AT TOP, LISTRIC SURF, SLTY IN BASA L HALF.
* 50	98.42	98.52	0.10			SANDSTONE	VFG.WEL.M.GY.SLD SLTY INTBDS, CALC.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
50	98.52	98.58	0.06			SANDSTONE	SLD AS ABV, CALC.
50	98.58	99.26	0.68			MUDSTONE	DK.GY.SLD NON CALC, SLTY AT TOP.
* 50	99.26	100.03	0.77			MUDSTONE	SLTY.M.GY.SLD SSY LAM AT TOP, CALC, MNR CALCT VEINLET S.
36	100.03	100.50	0.47			MUDSTONE	DK.GY.SLD MNR SLTY INTBDS, CALCT VEINLETS AT TOP, CALC.
* 30	100.50	100.60	0.10			MUDSTONE	DK.GY.SLD
* 25	100.60	101.02	0.42			MUDSTONE	SLD SLTST INTBDS, 5.0 CM SS BAND IN MIDDLE, XBDG - TOPS UP, CALC.
* 25	101.02	101.57	0.55			MUDSTONE	M.GY.SLD SLTST INTBDS, CALC.
25	101.57	102.00	0.43			MUDSTONE	SLD AS ABV.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 14	31.47	32.56	1.09			SANDSTONE	FG.MOD.LT-M.GY.LAM.SLD MNR SSD, FRAC ALONG BDG, THNBD TOWARDS BASE, SLTY INTBDS, GY-GN COLOR IN PART, CARB WISPS.
17	32.56	33.60	1.04			MUDSTONE	M.GY.SLD CALC, HARD, SILICIOUS FRAC, ABNT QTZ/CALCT VEINS IN UPPER SECTION, GY-GN COLOR IN PART, CARB WISPS, DISTINCT MARKER UNIT.
20	33.60	34.01	0.41			MUDSTONE	SLTY.M.GY.SSD.SLD TRANSITIONAL FROM UPPER UNIT.
21	34.01	34.21	0.20			MUDSTONE	VBRKN AS ABV.
21	34.21	34.51	0.30			ROCK LOSS	
23	34.51	35.19	0.68			MUDSTONE	DK.GY.BRKN LISTRIC SURF AT BASE, HIGH ANGLE CALCT VEIN.
24	35.19	35.49	0.30			ROCK LOSS	
26	35.49	36.19	0.70		8	COAL LOSS	

* DENOTES MEASURED BCA

SAMPLE SUMMARIES

GULF CANADA RESOURCES INC. - COAL DIVISION

24/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

TRUE THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83001										
	3	2152	23.15	23.78	93.65	0.560		0.038		0.60- 0.00
	4	2153	29.79	30.67	65.91	0.577		0.147	0.147	0.72- 0.15
		2154	70.00	70.04	100.00		0.039			0.00- 0.04
	5	2155	70.04	70.28	79.17	0.184		0.048		0.23- 0.00
	5	2156	70.28	70.78	100.00		0.484			0.00- 0.48
	5	2157	70.78	72.02	41.13	0.496		0.709		1.20- 0.00
	5	2158	72.02	72.07	100.00		0.049			0.00- 0.05
	5	2159	72.07	76.20	97.09	3.855	0.020	0.116		3.97- 0.02
		2160	76.20	76.46	38.46		0.096		0.153	0.00- 0.25
	2	2181	15.81	16.66	56.47	0.259	0.201	0.355		0.61- 0.20

GULF CANADA RESOURCES INC. - COAL DIVISION

28/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

APPARENT THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83001										
	2	2181	15.81	16.66	56.47	0.27	0.21	0.37	0.00	0.64- 0.21
	3	2152	23.15	23.78	93.65	0.59	0.00	0.04	0.00	0.63- 0.00
	4	2153	29.79	30.67	65.90	0.58	0.00	0.15	0.15	0.73- 0.15
		2154	70.00	70.04	100.00	0.00	0.04	0.00	0.00	0.00- 0.04
	5	2155	70.04	70.28	79.16	0.19	0.00	0.05	0.00	0.24- 0.00
	5	2156	70.28	70.78	100.00	0.00	0.50	0.00	0.00	0.00- 0.50
	5	2157	70.78	72.02	41.12	0.51	0.00	0.73	0.00	1.24- 0.00
	5	2158	72.02	72.07	100.00	0.00	0.05	0.00	0.00	0.00- 0.05
	5	2159	72.07	76.20	97.09	3.99	0.02	0.12	0.00	4.11- 0.02
		2160	76.20	77.62	88.73	0.00	1.26	0.00	0.16	0.00- 1.42

COAL SEAM DATA SHEETS

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83001 SEAM 2 SEAM INTERVAL 15.81m - 16.66m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 0.61m / 0.82m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP. 123456	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SINPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FSI
										SPG. = 1.50 FLOAT				
	15.13													
	15.28		(0.15)											
			0.53											
	15.81			0.05										
	15.86	C C C	0.17											
	16.03			0.12										
	16.21		0.04	0.02	56.5	2181		1.68	5.82	22.54	69.96	0.98	32.77	1.0
				(0.37)										
	16.58			0.08										
	16.66		0.13											
	16.89		0.10											

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COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83001 SEAM 3 SEAM INTERVAL 23.15m - 23.78m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 0.60m / 0.60

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP. 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FSI
	22.43		0.48											
			0.03											
	23.15		0.21	(0.04)										
	23.19			0.06										
				0.19										
	23.55			0.11	93.7	2152	09	1.26	20.87	22.99	54.88	0.84	25.91	1.5
	23.78			0.19										
				0.04										
	24.02		0.24											
			(0.28)											
	24.30													
	24.40		0.10											

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GDR 83-01 2 of

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83001 SEAM 4 SEAM INTERVAL 29.79m - 30.67m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 0.72m / 0.87

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP.	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	mJ/kg	FSI
1 2 3 4 5 6	29.03													
	29.12		0.09											
			0.39											
	29.51		0.19											
	29.70		0.09											
	29.79			0.58	65.9	2153	10	1.23	10.25	21.49	67.03	0.81	31.69	4.0
	30.37		(0.15)											
	30.52			(0.15)										
	30.67		0.04											
			0.09											
	30.95		0.15											

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc ---------- RESISTIVITY ————

DRILL NO. GDR-MB-DDH-83001 SEAM 5 SEAM INTERVAL 70.78m - 76.20m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 5.41m / 5.9

DENSITY SCALE 1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m 6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP. 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FS
	68.73													
	68.80		0.07											
	69.00		0.20											
			0.56											
	69.56													
			0.43											
	69.99				100.0	2154								
	70.04		0.05	0.15										
	70.28			(0.05) 0.04	79.2	2155								
			0.30											
	70.58				100.0	2156								
	70.78		0.20											
	70.87			0.09										
				(0.37)										
	71.24													
	71.45			0.21	41.1	2157								
				(0.36)										
	71.81													
	72.02			0.21	100.0	2158								
			0.05	0.01										
			0.01											
				1.16			01	1.34	16.24	18.03	64.39	0.34	29.37	1.(
	73.25													
	73.37			(0.12)										
					97.1	2159	02	1.28	6.34	19.46	72.92	0.37	32.84	1.(
													7849	
				2.60										
	75.95		0.01											
	76.20		(0.16)	0.22										
	76.36		0.10		100.0	2160								

GDR-MB-DDH-83002

DATA SOURCE SUMMARY

gcri coal division history proj GDR blk MB ds DDH83002

	dy mo yr
start date	01/08/83
end date	03/08/83

contractor J.T. THOMAS operator GULF CANADA
geologist SWANBERGSON surveyor MCELHANNEY

remarks DRILLED IN BASAL GETHING FORMATION. B.C. MINES TOO K 5 TUFF SAMPLES. FULL LOG SUITE ALSO RUN AT A 1:4 00 SCALE ON ONE PAGE.

gcri coal division location proj GDR blk MB ds DDH83002

province BC elevation (M) 1079.40
licence / lease number 0000004751

1	utm:	zone 10	northing 6166589.30	easting 345298.10		
2	lat-long:	lat 553842	long 1221649			

gcri coal division orientation proj GDR blk MB ds DDH83002

dimensions and orientation:

length (M) 99.00 inclination 60.0 azimuth 246.2
size width ___._ size height
roof strike dip dir
floor strike dip dir

casing depth (M) 2.13 cement(y,_) _ plug(Y,_) Y piez(Y,_) _
aquifer depths (M) 51.94 ____.__
lost circ. depths (m) ____.__ ____.__

DEVIATION SURVEY

CENTURY GEOPHYSICAL CORPORATION

* * * * * * * * VERTICAL DEVIATION * * * * * * * *

COMPU-LOG VSLT DEVIATION

CLIENT : GULF CANADA RES. INC HOLE ID : GDR-MB-DDH-83-002

LOCATION : GOODRICH-HOBERLY DATE OF LOG : 08-03-83

DATA FROM : VSL2* PROBE : 9055A 0039

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

	DEPTH	TRUE DEPTH	NORTH DEV	EAST DEV	DISTANCE	AZIMUTH	SA	SAB
	.00	.00	.00	.00	.00	.0	.0	.0
	5.00	4.36	-1.00	-2.22	2.43	245.6	29.2	245.3
	10.00	8.72	-2.01	-4.44	4.87	245.6	29.2	245.5
	15.00	13.09	-3.01	-6.66	7.31	245.6	29.1	245.7
	20.00	17.46	-3.98	-8.89	9.75	245.9	29.1	246.5
	25.00	21.83	-4.93	-11.12	12.16	245.1	28.9	246.3
	30.00	26.22	-5.90	-13.32	14.57	246.1	28.7	246.2
	35.00	30.60	-6.84	-15.52	16.97	246.2	28.6	246.7
	40.00	35.00	-7.78	-17.72	19.36	246.3	28.5	246.8
	45.00	39.39	-8.74	-19.90	21.74	246.3	28.4	246.4
	50.00	43.80	-9.69	-22.07	24.10	246.3	28.2	246.2
	55.00	48.21	-10.65	-24.22	26.46	246.3	28.0	245.8
	60.00	52.63	-11.59	-26.36	28.80	246.3	27.9	246.4
	65.00	57.05	-12.52	-28.49	31.12	246.3	27.7	246.2
	70.00	61.48	-13.47	-30.60	33.44	246.2	27.5	245.8
	75.00	65.92	-14.42	-32.71	35.75	246.2	27.4	245.9
	80.00	70.36	-15.37	-34.81	38.05	246.2	27.4	245.6
	85.00	74.80	-16.30	-36.90	40.34	246.2	27.2	246.0
	90.00	79.26	-17.24	-38.96	42.61	246.1	26.9	245.5
TD	92.40	81.40	-17.65	-39.87	43.63	246.2	26.9	247.8

VERTICAL DEVIATION

COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2

CLIENT : GULF CANADA RES. INC
LOCATION : GOODRICH-MOBERLY
HOLE ID : GDR-M8-DOH-83-002
DATE OF LOG : 08-03-83
PROBE : 9055A 0039

SCALE: 2.50 M/DIV
MAG DECL: 25.0
TRUE DEPTH: 81.4 M
AZIMUTH: 246.2
DISTANCE: 43.69 M

+ = 5.0 M INCR
Δ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑

CENTURY GEOPHYSICAL CORP. PART NO. 786-0040

DESCRIPTIVE LOG

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83/11/28 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	0.00	2.13	2.13			OVERBURDEN	
56	2.13	2.81	0.68			SANDSTONE	FG.WEL.LT-M.GY.LAM.BRKN WTHRD,MNR SLTY INTERBDS,BRKN SLTY MUDST .INTERBDS UP TO APPROX. 10 CM IN BASAL HALF,CALC
56	2.81	3.27	0.46			SANDSTONE	FG.WEL.LT.GY.LAM.SSD.SLD CALC
* 56	3.27	3.72	0.45			SANDSTONE	FG.WEL.LT.GY.LAM.SLD CORE BRKN AT BASE,CARB INTERBDS TOWARDS BASE,MNR ANGULAR SMALL SCALE RIP UP,CA LC
53	3.72	4.86	1.14			SANDSTONE	FG.WEL.LT-M.GY.SLD WELL XBDG,TOPS UP,CALC
* 50	4.86	5.68	0.82			SANDSTONE	MG.WEL.LT.GY.LAM.SLD LARGE SCALE XBDG UP TO 10 CM,CORE ROTAT ED AT TOP,CALC,COALY & CALCITIC WISPS A T BASE,MNR FRACTURING PARALLEL TO BDNG,
* 60	5.68	6.22	0.54			SANDSTONE	MG.WEL.LT.GY.THNB.SLD CALC,CARB LAM TOWARD BASE,RARE MUDST RI P UP

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	6.22	6.28	0.06			SILTSTONE	M.GY.LAM.SLD CARB LAMS,CALC
59	6.28	6.33	0.05			SANDSTONE	MG.LT.GY.THNB.SLD SLTST RIP UP AT BASE,CUT & FILL,TOPS UP ,CALC
59	6.33	6.60	0.27			SILTSTONE	M.GY.XBDG.SLD XBDG TOWARDS BASE,SHARP BASAL CONTACT,C ALC
58	6.60	7.01	0.41			SANDSTONE	MG.WEL.LT.GY.THNB.XBDG.SLD CALC
57	7.01	7.08	0.07			SANDSTONE	BRKN AS ABOVE
56	7.08	7.63	0.55			SANDSTONE	SLD AS ABOVE
56	7.63	7.75	0.12			SANDSTONE	SLD AS ABOVE
* 55	7.75	8.13	0.38			SANDSTONE	FG.WEL.M.GY.LAM.SLD XBDG,TOPS UP
55	8.13	9.30	1.17			SANDSTONE	MG.WEL.LT.GY.THNB.SLD XBDG,MNR CALC VEINLETS ALONG FRACTURE A T 70 DEG. ,CALC

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	9.30	9.38	0.08			SANDSTONE	MG.WEL.LT.GY.THNB.SLD XBDG,MNR CALC VEINLETS ALONG FRAC.
55	9.38	9.70	0.32			SANDSTONE	SLD AS ABOVE
55	9.70	9.77	0.07			MUDSTONE	SLTY.M.GY.LAM.SLD CALC
55	9.77	10.36	0.59			SANDSTONE	FG.WEL.LT-M.GY.LAM.SSD.SLD XBDG,SSD IN BASAL HALF ONLY,CALC
* 55	10.36	10.42	0.06			SANDSTONE	SLD AS ABOVE
55	10.42	10.52	0.10			MUDSTONE	DK.GY.SLD
55	10.52	10.62	0.10	02161		MUDSTONE	DK.GY.SLD
55	10.62	10.63	0.01	02162	18	COAL	C-4.VBRKN MNR MDST STRINGERS
55	10.63	10.82	0.19	02162	18	COAL	C-4.SLD VBRKN AT TOP
* 55	10.82	11.00	0.18	02163	18	MUDSTONE	DK.GY.SLD ABNT COAL STRINGERS IN BASAL HALF

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
55	11.00	11.10	0.10	02163	18	MUDSTONE	CARB.BLK.SLD ABNT COAL STRINGERS
55	11.10	11.15	0.05	02163	18	COAL	C-1.SLD 0.5 CM CARB MDST SPLIT NEAR BOTTOM
55	11.15	11.17	0.02	02163	18	COAL	C-1.VBRKN
55	11.17	11.24	0.07	02163	18	COAL LOSS	
55	11.24	11.31	0.07	02163	18	ROCK LOSS	
55	11.31	11.41	0.10	02163	18	MUDSTONE	DK.GY.SLD MNR C STRGS
56	11.41	11.46	0.05	02163	18	COAL	C-3.SLD
56	11.46	11.47	0.01	02163	18	MUDSTONE	CARB.BLK.SLD
56	11.47	11.53	0.06	02163	18	MUDSTONE	DK.GY.SLD MNR C STRGS
56	11.53	11.54	0.01	02163	18	MUDSTONE	CARB.BLK.SLD

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	11.54	11.93	0.39	02164	18	COAL	C-4.SLD
56	11.93	11.99	0.06	02164	18	COAL	C-4.VBRKN
56	11.99	12.09	0.10	02164	18	COAL	C-4.SLD
56	12.09	12.18	0.09	02164	18	COAL	C-4.BRKN LISTRIC SURFACES
56	12.18	12.38	0.20	02164	18	COAL LOSS	
57	12.38	12.46	0.08	02164	18	COAL	C-4.VBRKN MNR MDST STRGS
57	12.46	12.62	0.16	02164	18	COAL	C-4.SLD
57	12.62	12.65	0.03	02164	18	COAL	C-4.VBRKN
57	12.65	12.72	0.07	02164	18	COAL	C-4.SLD
57	12.72	12.74	0.02	02164	18	COAL	C-4.VBRKN

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	12.74	12.90	0.16	02164	18	COAL	C-4.SLD
57	12.90	13.00	0.10	02164	18	COAL	C-3.BRKN CORE INTACT
57	13.00	13.31	0.31	02164	18	COAL	C-3.SLD
57	13.31	13.33	0.02	02164	18	COAL	C-3.VBRKN
57	13.33	13.35	0.02	02164	18	COAL	C-4.BRKN
58	13.35	13.40	0.05	02164	18	MUDSTONE	DK.GY.BRKN
58	13.40	13.58	0.18	02164	18	ROCK LOSS	
58	13.58	13.60	0.02	02164	18	COAL	C-1.SLD
58	13.60	13.67	0.07	02164	18	COAL	C-4.VBRKN PULVERIZED
58	13.67	13.86	0.19	02165		MUDSTONE	BLK.SLD 0.10M SAMPLE TAKEN

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
58	13.86	14.01	0.15			ROCK LOSS	
58	14.01	14.04	0.03			MUDSTONE	DK.GY.VBRKN
58	14.04	14.15	0.11			MUDSTONE	DK.GY.SLD
59	14.15	14.59	0.44			MUDSTONE	DK.GY.SLD
59	14.59	14.63	0.04			ROCK LOSS	
59	14.63	14.70	0.07			MUDSTONE	DK.GY.BRKN MNR C STRGS.,LISTRIC SURFACES
59	14.70	14.86	0.16			MUDSTONE	DK.GY.SLD MNR CALCT VEINLETS,MNR COALIFIED GRASS BLADES
59	14.86	15.61	0.75			MUDSTONE	SLTY.M.GY.SLD CALC
60	15.61	15.65	0.04			MUDSTONE	SLTY.M.GY.SLD CALC
* 60	15.65	15.92	0.27			SANDSTONE	FG.MOD.LT-M.GY.THNB.SLD MNR CALCT VEIN,CALC,LAM IN MIDDLE

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	15.92	17.14	1.22			MUDSTONE	DK.GY.SLD CALC.
60	17.14	17.52	0.38			MUDSTONE	DK.GY.SSD.SLD CALC,SILTY AT BASE.
60	17.52	17.68	0.16			SANDSTONE	MG.MOD.LT-DK.GY.THNB.SLD COALY WISPS, SILTY MUDST INTBDS AT TOP, CALC.
60	17.68	17.75	0.07			MUDSTONE	DK.GY.SLD CALC.
* 60	17.75	18.66	0.91			MUDSTONE	DK.GY.SLD CALC.
61	18.66	19.89	1.23			MUDSTONE	DK.GY.SLD CALC
61	19.89	20.26	0.37			MUDSTONE	DK.GY.SLD CALC
61	20.26	20.65	0.39			MUDSTONE	DK.GY.SLD ABNT CALCT VEINLETS TO BASE,MNR SLTY IN TBS AT TOP AND BOTTOM
61	20.65	21.27	0.62			MUDSTONE	LT-M.GY.WRMBU.SLD SLTY AT TOP,FG SST INTBS(UP TO 5 CM),CU T AND FILL,TOPS UP

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	21.27	21.66	0.39			SANDSTONE	FG,WEL,LT-M,GY,LAM,WRMBU,SLD MDST INTBDS UP TO 4 CM,TOPS UP,LAM IN P ART,XBDG,DISEMINATED PYRITE AT BASE
62	21.66	21.78	0.12			SANDSTONE	MG,WEL,LT,GY,THNB,SLD MNR CALCT AT BASE,CALC
62	21.78	22.02	0.24			SANDSTONE	MG,WEL,LT-M,GY,SSD,SLD IRREGULAR BASAL CONTACT,CALC,CALCT VEIN LETS,CORE BRKN AT BASE
62	22.02	22.41	0.39			MUDSTONE	DK,GY,SLD CORE BRKN AT BASE,CARB AT TOP
62	22.41	22.51	0.10	02166		MUDSTONE	DK,GY,SLD AS ABOVE
62	22.51	22.76	0.25	02167		SANDSTONE	FG,WEL,LT,GY,THNB,SLD COAL STRGS TOWARD BASE,MNR CALCT VEINLE TS
62	22.76	22.83	0.07	02168	19	COAL LOSS	
62	22.83	23.05	0.22	02168	19	COAL	C-3,VBRKN
62	23.05	23.20	0.15	02168	19	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	23.20	23.33	0.13	02168	19	COAL	C-4.BRKN CORE ROTATED
62	23.33	23.45	0.12	02168	19	COAL	C-4.SLD
63	23.45	23.47	0.02	02168	19	COAL	C-3.SLD
63	23.47	23.54	0.07	02168	19	COAL	C-4.SLD
63	23.54	23.65	0.11	02168	19	COAL	C-4.SLD
63	23.65	23.72	0.07	02168	19	COAL	C-3.BRKN
63	23.72	23.81	0.09	02168	19	COAL	C-4.SLD
63	23.81	23.83	0.02	02168	19	COAL	C-4.BRKN
63	23.83	24.07	0.24	02168	19	COAL	C-4.SLD
63	24.07	24.10	0.03	02168	19	COAL	C-4.BRKN

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	24.10	24.24	0.14	02168	19	COAL	C-4.SLD
63	24.24	24.33	0.09	02168	19	COAL	C-4.BRKN
63	24.33	24.41	0.08	02168	19	COAL	C-4.VBRKN
63	24.41	24.51	0.10	02168	19	COAL	C-4.SLD
63	24.51	24.52	0.01	02168	19	COAL	C-4.BRKN
63	24.52	24.63	0.11	02168	19	COAL LOSS	
63	24.63	24.79	0.16	02169	19	ROCK LOSS	
63	24.79	24.89	0.10	02169	19	MUDSTONE	DK.GY.VBRKN
63	24.89	24.93	0.04	02169	19	MUDSTONE	CARB.BLK.SLD ABNT COAL STRGS
63	24.93	25.50	0.57	02170	19	COAL	C-4.BRKN CORE INTACT,LACKS GOOD CLEATING

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	25.50	25.70	0.20	02170	19	COAL	C-4.BRKN
64	25.70	25.73	0.03	02170	19	COAL	C-4.VBRKN
64	25.73	25.91	0.18	02170	19	COAL LOSS	
64	25.91	26.00	0.09	02171	19	ROCK LOSS	
64	26.00	26.17	0.17	02171	19	MUDSTONE	DK.GY.SLD MNR COAL STRNGS,NON CALC
64	26.17	26.32	0.15	02172	19	COAL	C-4.BRKN
64	26.32	26.74	0.42	02172	19	COAL	C-4.BRKN CORE INTACT
64	26.74	26.77	0.03	02172	19	COAL	C-3.VBRKN
64	26.77	26.88	0.11	02173	19	ROCK LOSS	
64	26.88	26.96	0.08	02173	19	MUDSTONE	DK.GY.SLD ABNT SMALL COAL BLEBS & LENSES
64	26.96	27.03	0.07	02173	19	COAL	C-3.SLD HARD,LACKS CLEAVAGE

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	27.03	27.36	0.33	02173	19	MUDSTONE	DK.GY.SLD SLTY IN MIDDLE,NON-CALC
64	27.36	27.37	0.01	02173	19	COAL	C-3.BRKN
64	27.37	27.61	0.24	02173	19	MUDSTONE	BLK.SLD CARB AT TOP,NON CALC,MNR COAL STRGS
65	27.61	27.73	0.12	02173	19	MUDSTONE	CARB.BLK.BRKN VBRKN AT BASE,NON CALC
65	27.73	27.80	0.07	02173	19	MUDSTONE	DK.GY.BRKN NON CALC
65	27.80	27.88	0.08	02174	19	COAL	C-4.SLD
65	27.88	28.14	0.26	02174	19	COAL	C-4.VBRKN PULVERIZED AT BASE
65	28.14	28.24	0.10	02175		MUDSTONE	SLTY.M.GY.SLD MNR SLTY LAM,NON CALC
65	28.24	28.45	0.21			MUDSTONE	SLTY.M.GY.SLD AS ABOVE

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 65	28.45	28.95	0.50			SANDSTONE	FG.WEL.LT-M.GY.THNB.SLD BRKN AT BASE,SLTY MUDST LAM IN UPPER HA LF,CALC
64	28.95	29.37	0.42			SANDSTONE	FG.WEL.LT.GY.THNB.SLD CALC,CUT & FILL,
63	29.37	29.48	0.11			SANDSTONE	FG.WEL.M.GY.THNB.SSD.SLD NON CALC
62	29.48	30.47	0.99			MUDSTONE	SLTY.M.GY.THNB.SSD.SLD MNR SLTY INTBDS IN UPPER HALF,NON CALC
61	30.47	30.56	0.09			ROCK LOSS	
61	30.56	30.76	0.20			MUDSTONE	DK.GY.SLD CORE BRKN AT TOP,COAL STRGS TOWARDS BAS E,SOMEWHAT CARB IN MIDDLE,DISEM. PYRITE IN MIDDLE
61	30.76	30.80	0.04	02185		COAL	C-3.VBRKN
60	30.80	30.88	0.08	02185		MUDSTONE	CARB.M.GY.BRKN

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	30.88	30.92	0.04	02185		MUDSTONE	M.GY.SLD MNR COAL STRINGS
60	30.92	30.94	0.02	02185		MUDSTONE	CARB.BLK.SLD
60	30.94	30.97	0.03	02185	20	COAL	C-3.SLD
60	30.97	30.99	0.02	02185	20	MUDSTONE	CARB.DK.GY.SLD
60	30.99	31.04	0.05	02185	20	COAL	C-3.VBRKN
* 60	31.04	31.09	0.05	02185	20	MUDSTONE	M.GY.SLD MNR COAL STRINGS
60	31.09	31.11	0.02	02185	20	COAL	C-3.VBRKN
60	31.11	31.18	0.07	02185	20	MUDSTONE	DK.GY.BRKN CARB AT BASE
60	31.18	31.29	0.11	02185	20	COAL	C-3.BRKN CORE PULVERIZED BUT IN TACT
60	31.29	31.40	0.11	02185	20	MUDSTONE	DK.GY.SLD NON CALC

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	31.40	31.45	0.05	02185	20	COAL	C-3.BRKN C83-264 BC MINES
60	31.45	31.54	0.09			MUDSTONE	DK.GY.SLD NON CALC
60	31.54	31.94	0.40			MUDSTONE	SLTY.M.GY.SSD.SLD MORE SLTY TOWARDS BASE DISEM. AT TOP,CALC
60	31.94	32.31	0.37			MUDSTONE	SLTY.M-DK.GY.SLD MNR SST INTBD,CALC
60	32.31	33.14	0.83			SANDSTONE	FG.LT-M.GY.LAM.XBDG.SLD COURSE TOWARDS BASE,XBDG-TOPS UP,ABNT CARB LAMS,CALC. FRAC. 68 DEG,CALCT INFILLING
* 60	33.14	33.31	0.17			MUDSTONE	SLTY.LT-M.GY.SSD.SLD SSDY INTBD,CALC
60	33.31	33.41	0.10			MUDSTONE	AS ABOVE
60	33.41	33.62	0.21			MUDSTONE	DK.GY.SLD
60	33.62	33.96	0.34			SANDSTONE	MG.WEL.LT.GY.SSD.SLD MDST INTBD IN UPPER XBDG,CALC

* DENOTES MEASURED BCA

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 60	33.96	35.06	1.10			MUDSTONE	SLTY.M-DK.GY.SLD RARE SMALL SS BEDS CALC
60	35.06	35.37	0.31			MUDSTONE	DK.GY.SLD MNR SS LAMS AT TOP ,MNR CALCT VEINLETS, NON CALC
60	35.37	35.67	0.30			ROCK LOSS	
60	35.67	35.85	0.18			MUDSTONE	DK.GY.SLD AS ABOVE,BRKN AT TOP
60	35.85	36.89	1.04			MUDSTONE	SLTY.LT-M.GY.SLD BIOTRB IN BASAL HALF,SLST LAM.,MNR CALC T VEINLETS AT 50 DEG
60	36.89	37.80	0.91			MUDSTONE	DK.GY.SLD NON CALC,SLST INTBDS IN UPPER PORTION,D ECREASING TO BASE
60	37.80	37.85	0.05			MUDSTONE	GY.SLD AS ABOVE
60	37.85	38.43	0.58			MUDSTONE	LT-M.GY.BIOTR.SLD WITH REGULAR MG SS INTBDS AND LENSES CA LC MNR PYRITE

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 60	38.43	38.63	0.20			MUDSTONE	GY.SLD SSDY INTBDS
60	38.63	39.73	1.10			MUDSTONE	SLTY.LT-M.GY.SSD.SLD SLTY LAMS INTBDS,CALC SLTY COALY WISPS CALC. RIMMED
60	39.73	39.86	0.13			MUDSTONE	DK.GY.SSD.SLD RARE COAL WISPS,NON CALC
60	39.86	39.93	0.07			MUDSTONE	SLD AS ABOVE
60	39.93	40.06	0.13			MUDSTONE	DK.GY.SLD MNR SLTY LAMS
60	40.06	40.85	0.79			SANDSTONE	FG.MOD.LT-M.GY.THNB.XBDG.SLD SLTY MDST INTBDS WHICH THICKEN TOWARDS BASE(TO 14 CM)
60	40.85	41.40	0.55			SANDSTONE	MG.WEL.LT.GY.THNB.SLD MNR SLTY INTBDS AT TOP,SSD AT TOP
60	41.40	41.59	0.19			MUDSTONE	DK.GY.SLD SSY LAM TOWARDS BASE,CORE BROKEN AT TOP
60	41.59	41.91	0.32			SANDSTONE	MG.WEL.LT.GY.XBDG.SLD WELL XBDG,MNR MDST LAM AT TOP

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	41.91	41.96	0.05			MUDSTONE	SLTY.DK.GY.SLD SHARP WAVY CONTACT
60	41.96	42.16	0.20			SANDSTONE	MG.WEL.LT.GY,XBDG.SLD SLTY MDST LAM IN BASAL HALF,CALC
60	42.16	42.72	0.56			MUDSTONE	DK.GY.SLD RARE SLTY INTBD CALC
60	42.72	42.90	0.18			SANDSTONE	FG.WEL.LT-M.GY.THNB.XBDG.SLD CALC,MNR MUDST INTBDS XBDG
* 60	42.90	43.93	1.03			SANDSTONE	FG.MOD.LT-M.GY.THNB.XBDG.SLD ABNT SLTY MDST INTBDS CUT AND FILL,WORM BURROWS
61	43.93	44.50	0.57			SANDSTONE	SLD AS ABOVE
61	44.50	44.95	0.45			SANDSTONE	SLD AS ABOVE
61	44.95	45.43	0.48			MUDSTONE	CARB.DK.GY.SLD MNR SSY LAM. AT TOP
62	45.43	45.59	0.16			SANDSTONE	MG.MOD.GY.SSD MUDST LAM AND INTBDS , BIOTRB. AT BASE

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	45.59	45.89	0.30			MUDSTONE	DK.GY.SLD
62	45.89	47.14	1.25			MUDSTONE	DK.GY.SLD MNR SS LAMS AT TOP AND BOTTOM,NON CALC.
63	47.14	47.24	0.10	02176		MUDSTONE	CARB.SLD
63	47.24	47.26	0.02	02176		MUDSTONE	CARB.SLD COAL STRINGS
63	47.26	47.29	0.03	02177	21	COAL	C-4.SLD
63	47.29	47.31	0.02	02177	21	MUDSTONE	CARB.SLD
63	47.31	47.33	0.02	02177	21	COAL	C-4.SLD
63	47.33	47.40	0.07	02177	21	COAL	C-4.VBRKN MNR PYRITE
63	47.40	47.46	0.06	02177	21	COAL	C-4.SLD
63	47.46	47.48	0.02	02177	21	COAL	C-4.VBRKN

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	47.48	47.60	0.12	02177	21	ROCK LOSS	
63	47.60	47.70	0.10	02177	21	COAL	C-4.SLD
63	47.70	47.74	0.04	02177	21	COAL	C-3.VBRKN
63	47.74	47.79	0.05	02177	21	COAL	C-4.SLD
64	47.79	47.82	0.03	02177	21	COAL	C-4.VBRKN
64	47.82	47.86	0.04	02177	21	COAL	C-4.SLD
64	47.86	47.90	0.04	02177	21	MUDSTONE	CARB.BLK.SLD COAL STRINGS
64	47.90	48.02	0.12	02177	21	COAL	C-4.SLD POOR CLEATING
64	48.02	48.21	0.19	02177	21	COAL	C-3.VBRKN CORE PULVERIZED BUT IN TACT
64	48.21	48.27	0.06	02178	21	ROCK LOSS	
64	48.27	48.69	0.42	02178	21	MUDSTONE	DK.GY.SLD

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	48.69	48.75	0.06	02179	21	COAL	C-4.SLD
64	48.75	48.80	0.05	02179	21	COAL	C-1.BRKN
64	48.80	48.81	0.01	02179	21	COAL	C-1.VBRKN
64	48.81	49.01	0.20	02179	21	COAL LOSS	
64	49.01	49.08	0.07	02179	21	COAL	C-2.VBRKN
65	49.08	49.10	0.02	02180		MUDSTONE	CARB.BLK.SLD COAL STRINGS
65	49.10	49.20	0.10	02180		MUDSTONE	CARB.BLK.SLD MNR SSY INTBDS
* 65	49.20	50.15	0.95			MUDSTONE	DK.GY.SLD MNR SSY INTBDS IN UPPER HALF
65	50.15	50.25	0.10			MUDSTONE	SLD AS ABOVE
65	50.25	50.29	0.04			MUDSTONE	CARB.BLK.BRKN COALY WISPS

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
65	50.29	50.44	0.15			MUDSTONE	DK.GY.SLD COAL STRINGS
65	50.44	50.49	0.05			ROCK LOSS	
65	50.49	51.24	0.75			MUDSTONE	LT-M.GY.SSD.SLD FG SSY INTBDS IN UPPER HALF,MNR CALCITE VEINLETS COALY WISPS NEAR TOP, NON CAL C AT BASE
65	51.24	51.29	0.05		22	COAL	C-4.BRKN MNR MDST INTBDS
65	51.29	51.34	0.05		22	MUDSTONE	CARB.BLK.BRKN ABNT COAL STRINGS
65	51.34	51.38	0.04		22	COAL	C-4.VBRKN
* 65	51.38	51.46	0.08		22	MUDSTONE	DK.GY.SLD MNR COAL STRINGS
65	51.46	51.54	0.08		22	COAL	C-3.VBRKN C83-265 BC MINES
66	51.54	51.87	0.33			MUDSTONE	SLTY.M.GY.SLD CALC,CARB AT TOP

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	51.87	51.94	0.07			SANDSTONE	FG.WEL.LT.GY.SLD
66	51.94	51.97	0.03			MUDSTONE	DK.GY.SLD SURROUNDED BY UNCONSOLIDATED MUD WITH R OTATED ROCK PIECES INCORPORATED IN THE MUD-MUD OMMITTED FROM LITHO DESCRIPTION S
67	51.97	52.23	0.26			SANDSTONE	FG.WEL.LT-M.GY.LAM.XBDG.SLD MNR MUDST AT TOP,ABNT XBDS ,MUDST LAM.T OPS UP CALC
* 67	52.23	52.38	0.15			MUDSTONE	DK.GY.THNB.SLD MNR SSY LENSES,SHARP UPPER AND LOWER CT C,CALC
67	52.38	52.61	0.23			SANDSTONE	MG.WEL.LT.GY.THNB.SSD.SLD MUDDY LAM AT BASE,C-WISPS AT TOP,CALC
67	52.61	53.27	0.66			MUDSTONE	DK.GY.SLD CORE BROKEN AT BASE,CALCT WISPS AND SLT Y LENSES IN MIDDLE,CALC,MNR SHELL FRAG NEAR BASE,PARTIALLY PYRITIZED BIVALVE U P TO 7 MM IN SECTION,AVG 2MM,CALC
66	53.27	53.35	0.08			MUDSTONE	DK.GY.SLD MNR C WISPS , CALC

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
66	53.35	53.64	0.29			SILTSTONE	LT-M.GY.SSD.SLD BIOTURB. INCREASING IN SLTY MUDST TOWARDS BASE,CALC
66	53.64	54.36	0.72			MUDSTONE	DK.GY.SLD SLTY AT TOP,C STRGS TOWARDS BASE CALC,NON CALC IN BASAL 25 CM
66	54.36	54.39	0.03			COAL	C-3.VBRKN
66	54.39	54.51	0.12			COAL LOSS	
66	54.51	54.62	0.11			ROCK LOSS	
66	54.62	55.39	0.77			MUDSTONE	DK.GY.SLD ABNT CALCT VEINLETS,CALC
65	55.39	55.45	0.06			MUDSTONE	M.GY.LAM.SLD SLTY INTBDS,CALC
65	55.45	56.00	0.55			MUDSTONE	M.GY.LAM.SLD MNR CALCT VEINLETS SLTY INTBDS,CALC,MNR SSY INTBDS

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 65	56.00	56.28	0.28			SANDSTONE	FG.WEL.LT.GY.LAM.XBDG.SLD MNR MUDDY INTBDS,CALC
65	56.28	57.52	1.24			MUDSTONE	LT-M.GY.THNB.SLD MNR C AND CALCT WISPS,SLTY AND SSY INTB DS
64	57.52	58.16	0.64			MUDSTONE	DK.GY.SLD CALCT VEINLETS,CALC
64	58.16	58.21	0.05			MUDSTONE	CARB.BLK.SLD ABNT C STRGS
64	58.21	58.44	0.23			MUDSTONE	DK.GY.SLD CALC
64	58.44	58.51	0.07			MUDSTONE	CARB.BLK.SLD ABNT C STRGS
64	58.51	58.61	0.10			MUDSTONE	DK.GY.SLD NON CALC,MNR C LENSES
64	58.61	59.09	0.48			SILTSTONE	M.GY.THNB.SLD RARE THN MUDST INTBDS,NON CALC
63	59.09	59.39	0.30			SILTSTONE	M.GY.THNB.BRKN RARE THN MDST INTBDS,NON CALC,LISTRIC S URFACES

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	59.39	59.58	0.19			SILTSTONE	M.GY.THNB.SSD.SLD RARE THN MUDST INTBDS,NON CALC
63	59.58	60.51	0.93			SILTSTONE	LT-M.GY.THNB.SSD.SLD SSY INTBDS,WRMBUR,NON-CALC
63	60.51	60.99	0.48			MUDSTONE	DK.GY.SLD MNR COAL LENSES
62	60.99	61.28	0.29			ROCK LOSS	
62	61.28	61.34	0.06	02186	23	COAL	C-4.BRKN POSS HIGH ASH CONTENT
62	61.34	61.44	0.10	02186	23	COAL	C-4.SLD C38-266 BC MINES
62	61.44	61.53	0.09	02186	23	COAL	C-4.VBRKN
62	61.53	61.66	0.13	02186	23	COAL LOSS	
62	61.66	61.79	0.13	02186	23	COAL	C-2.VBRKN
62	61.79	61.87	0.08	02187	24	ROCK LOSS	
62	61.87	61.93	0.06	02187	24	MUDSTONE	M.GY.SLD CORE BRKN AT TOP,NON CALC

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
62	61.93	62.25	0.32	02187	24	MUDSTONE	M.GY.SLD NON CALC
62	62.25	62.32	0.07	02187	24	MUDSTONE	CARB.BLK.SLD BRIGHT COAL STRNGS,NON CALC
62	62.32	62.33	0.01	02187	24	COAL	C-1.SLD
62	62.33	62.40	0.07	02187	24	COAL	C-4.SLD
62	62.40	62.43	0.03	02187	24	ROCK LOSS	
62	62.43	62.52	0.09	02187	24	MUDSTONE	DK.GY.SLD
62	62.52	62.54	0.02	02187	24	MUDSTONE	CARB.BLK.SLD
62	62.54	62.81	0.27	02187	24	MUDSTONE	DK.GY.SLD MNR COAL STRINGS
61	62.81	62.91	0.10	02187	24	MUDSTONE	CARB.BLK.SLD ABNT COAL STRINGERS
61	62.91	62.96	0.05	02187	24	ROCK LOSS	
61	62.96	63.00	0.04	02187	24	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
61	63.00	63.06	0.06	02187	24	COAL	C-4.VBRKN
61	63.06	63.47	0.41	02187	24	MUDSTONE	BLK.SLD COAL STRINGERS THROUGHOUT,CARB AT BASE
61	63.47	63.49	0.02	02187	24	ROCK LOSS	
61	63.49	63.93	0.44	02187	24	MUDSTONE	CARB.BLK.BRKN MNR COAL(C-1),UP TO 1 CM,ABNT COAL STRI NGS
61	63.93	64.03	0.10	02187	24	MUDSTONE	BLK.SLD MNR COAL STRINGERS
61	64.03	65.41	1.38			MUDSTONE	SLTY.DK.GY.SSD.SLD BIOTRB,0.4 M SLTST BAND AT BASE
* 60	65.41	66.04	0.63			MUDSTONE	SLTY.LT-M.GY.WRMBU.SLD MNR FG SS INTBDS.BIOTRB AT TOP
60	66.04	66.39	0.35			MUDSTONE	DK.GY.SLD SLTY AT TOP,NON CALC
60	66.39	66.47	0.08			MUDSTONE	BLK.VBRKN LISTRIC SURFACES,NON CALC,MNR COAL BAND S

* DENOTES MEASURED BCA

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PROJECT: GDR · BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
59	66.47	66.91	0.44			MUDSTONE	DK.GY.SLD SLTY AT BASE,NON CALC
59	66.91	67.21	0.30			SANDSTONE	FG.MOD.LT-M.GY.THNB.WRMBU.SLD MDST INTBDS,SSY,NON CALC
59	67.21	67.45	0.24			SANDSTONE	FG.WEL.LT-M.GY.THNB.SLD CARB LAM,CALC
59	67.45	67.84	0.39			SANDSTONE	MG.WEL.LT.GY.THNB.SLD .07M SLTST BAND,CALC,ANGULAR RIP-UP IN BASAL HALF,MASSIVE AT BASE
59	67.84	68.03	0.19			SANDSTONE	FG.WEL.LT-M.GY.THNB.XBDG.SLD MDST LAM,MNR BUR AT TOP,TOPS UP CALC
58	68.03	68.13	0.10			SANDSTONE	MG.WEL.LT.GY.THNB.SLD UNDULATING BASAL CONTACT,POSS LOAD CAST S,CALC
58	68.13	68.30	0.17			MUDSTONE	SLTY.LT-M.GY.THNB.SLD SS INTBDS,SS ARE CALC
58	68.30	69.14	0.84			MUDSTONE	LT-M.GY.THNB.SLD SS INTBDS TO 14CM,MNR SSD ,POSS WRMBUR
57	69.14	70.17	1.03			MUDSTONE	M.GY.SLD MNR SLTY INTBDS AT TOP,NON CALC

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
57	70.17	71.21	1.04			MUDSTONE	BLK.SLD NON CALC
56	71.21	71.52	0.31			MUDSTONE	BLK.SLD NON CALC
56	71.52	71.93	0.41			MUDSTONE	BLK.SLD NON CALC,COAL STRINGERS AT BASE
56	71.93	72.07	0.14			MUDSTONE	CARB.BLK.BRKN BRIGHT COAL STRINGS,NON CALC,C83-267 BC MINES
56	72.07	72.18	0.11			MUDSTONE	DK.GY.BRKN NON CALC
56	72.18	72.62	0.44			ROCK LOSS	
55	72.62	72.79	0.17			MUDSTONE	M.GY.SLD NON CALC
* 55	72.79	73.66	0.87			SANDSTONE	MG.WEL.LT-M.GY.THNB.SLD SLTY MUDST INTBD,SSY IN UPPER HALF,CALC
56	73.66	74.48	0.82			MUDSTONE	DK.GY.SLD MNR SSY BD NEAR BASE,NON CALC,SLTY AT TOP

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
56	74.48	74.76	0.28			MUDSTONE	DK.GY.SLD NON CALC
57	74.76	75.22	0.46			MUDSTONE	DK.GY.SLD NON CALC
57	75.22	76.09	0.87			MUDSTONE	SLTY.SSD.SLD SLTY INTBDS,CALCT VEINLETS,TRANSITIONAL BASAL CONTACT,BDS HIGHLY DEFORMED,CALC
58	76.09	76.88	0.79			SANDSTONE	MG.MOD.LT-M.GY.SSD.SLD SLTY MUDST INTBDS,BDS HIGHLY DEFORMED
59	76.88	77.26	0.38			SANDSTONE	MG.MOD.LT-M.GY.SSD.SLD SLTY MDST INTBS,HIGHLY DEFORMED
59	77.26	77.59	0.33			ROCK LOSS	CORE DOESN'T FIT TOGETHER
59	77.59	77.85	0.26			SANDSTONE	SLD AS ABOVE
59	77.85	78.13	0.28			SANDSTONE	MG.MOD.LT-M.GY.SLD SLTY MDST INTBDS,BEDS LESS DEFORMED,INCREASING MUD CONTENT,CALC
60	78.13	78.43	0.30			MUDSTONE	M.GY.THNB.SLD MNR SLTY INTBDS TOWARDS BASE

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 60	78.43	78.76	0.33			SANDSTONE	MG.MOD.LT-M.GY.THNB.SLD SLTY MDST INTBDS UP TO 5 CM,MNR CARB LA M,CALCT RIMMED COAL WISPS,CALC
59	78.76	79.21	0.45			MUDSTONE	DK.GY.SLD MNR SSY INTBDS AT BASE
58	79.21	79.33	0.12			SANDSTONE	FG.WEL.LT.GY.THNB.SLD CALC,MNR SLTY INTBDS AT BASE
* 55	79.33	80.90	1.57			MUDSTONE	DK.GY.SLD OCC. VFG SST INTBDS UP TO 4CM
59	80.90	81.41	0.51			MUDSTONE	DK.GY.SLD
61	81.41	81.97	0.56			MUDSTONE	DK.GY.SLD INCREASING SILT TOWARDS BASE
* 65	81.97	83.55	1.58			SANDSTONE	MG.WEL.LT-M.GY.THNB.WRMBU.SLD MUDST INTBDS UP TO .20M MNR SSD ,CALC
64	83.55	83.92	0.37			SANDSTONE	SLD AS ABOVE
64	83.92	84.23	0.31			SANDSTONE	SLD AS ABOVE

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
64	84.23	84.43	0.20			SANDSTONE	MG.WEL.LT.GY.THNB.SLD CALC
64	84.43	85.64	1.21			MUDSTONE	DK.GY.WRMBU.SLD MNR SLTY INTBDS AT TOP
63	85.64	85.69	0.05			MUDSTONE	DK.GY.BRKN MNR COAL STRINGS
63	85.69	85.98	0.29			MUDSTONE	DK.GY.SLD MNR COAL STRGS
63	85.98	86.05	0.07			MUDSTONE	CARB.BLK.SLD ABNT COAL STRGS
63	86.05	86.12	0.07			MUDSTONE	CARB.BLK.SLD COAL LENSES,C83-268 BC MINES @ 86.0M
63	86.12	86.22	0.10			MUDSTONE	CARB.BLK.VBRKN ABNT COAL LENSES
63	86.22	86.45	0.23			ROCK LOSS	
63	86.45	86.60	0.15			MUDSTONE	CARB.BLK.SLD ABNT COAL LENSES BRKN AT BASE
63	86.60	86.83	0.23			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
63	86.83	86.89	0.06			COAL	C-4.VBRKN MDST LENSES AND STRGS
63	86.89	86.98	0.09			COAL LOSS	
63	86.98	87.07	0.09			MUDSTONE	CARB.BLK.SLD COAL LENSES
62	87.07	88.01	0.94			MUDSTONE	M.GY.SLD SLTY IN BASAL HALF ,NON CALC
62	88.01	88.73	0.72			MUDSTONE	SLTY.M.GY.THNB.SLD SLTY INTBDS IN BASAL HALF
61	88.73	89.93	1.20			SANDSTONE	FG.WEL.LT-M.GY.THNB.SSD.SLD MNR SLTY INTBDS,NON CALC SST COARSENING TO BASE,CALCT VEINLETS AT BASE,WRMBUR
61	89.93	90.11	0.18			SANDSTONE	MG.WEL.LT.GY.THNB.SLD CALCT VEINLETS,MNR SKS,CALC
61	90.11	90.37	0.26			SANDSTONE	XBDG.SLD AS ABOVE @ LARGE SCALE XBDG-TOPS UP,NON CALC
61	90.37	90.81	0.44			SANDSTONE	MG.WEL.LT.GY.THNB.VBRKN CALCT VEINS AND VEINLETS,NON CALC
60	90.81	91.21	0.40			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
60	91.21	91.56	0.35			SANDSTONE	BRKN AS ABOVE
* 60	91.56	91.82	0.26			SILTSTONE	M.GY.LAM.SLD SSD IN MIDDLE ,MNR CALCT VEIN IN MIDDLE
57	91.82	92.56	0.74			SANDSTONE	FG.MOD.LT-M.GY.THNB.WRMBU.SLD MNR SLTST INTB,CALC IN MIDDLE,MNR ANGUL AR SLTY MUDST RIP-UP
54	92.56	92.58	0.02			SANDSTONE	SLD AS ABOVE
52	92.58	92.98	0.40			ROCK LOSS	
* 45	92.98	94.73	1.75			MUDSTONE	DK.GY.SLD SLTY,NON CALC,MNR CALCT,VEINLETS
43	94.73	94.80	0.07			SILTSTONE	M.GY.SLD CALCT AND PYRITE INFILL,CIGAR SHAPED FO SS. UP TO 2 CM THE CENTERS ARE SOFT AND BLK
43	94.80	95.05	0.25			MUDSTONE	DK.GY.SLD

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
42	95.05	95.90	0.85			MUDSTONE	DK.GY.SLD MNR CALCT VEINS
41	95.90	96.00	0.10			ROCK LOSS	
41	96.00	96.10	0.10			ROCK LOSS	
* 40	96.10	96.57	0.47			MUDSTONE	DK.GY.SLD CORE BRKN AT BOTTOM,CALCT VEINLETS NEAR TOP SLTY INTBDS
* 15	96.57	96.86	0.29			MUDSTONE	DK.GY.SLD CALCT VEINLETS,SLTY INTBDS
* 40	96.86	96.98	0.12			MUDSTONE	SLD AS ABOVE
* 70	96.98	97.34	0.36			MUDSTONE	DK.GY.SLD SLTY INTBDS
70	97.34	99.00	1.66			MUDSTONE	DK.GY.SLD SLTY INTBDS ,INCREASING CALCT VEINS TO BASE ,IRREGULAR FRAC,MNR SKS,POSSIBLY APPROACHING MAJOR STRUCTURE. END OF HOLE

* DENOTES MEASURED BCA

SAMPLE SUMMARIES

GULF CANADA RESOURCES INC. - COAL DIVISION

28/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

TRUE THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83002										
		2161	10.52	10.62	100.00		0.082			0.00- 0.08
	18	2162	10.62	10.82	100.00	0.164				0.16- 0.00
	18	2163	10.82	11.54	80.56	0.098	0.377	0.058	0.058	0.16- 0.43
	18	2164	11.54	13.67	82.16	1.422	0.042	0.167	0.152	1.59- 0.19
		2165	13.67	13.86	100.00		0.161			0.00- 0.16
		2166	22.41	22.51	100.00		0.088			0.00- 0.09
		2167	22.51	22.76	100.00		0.221			0.00- 0.22
	19	2168	22.76	24.63	82.35	1.368		0.293		1.66- 0.00
	19	2169	24.63	24.93	46.67		0.125		0.143	0.00- 0.27
	19	2170	24.93	25.91	81.63	0.715		0.161		0.88- 0.00
	19	2171	25.91	26.17	65.38		0.152		0.081	0.00- 0.23
	19	2172	26.17	26.77	100.00	0.539				0.54- 0.00
	19	2173	26.77	27.80	89.32	0.072	0.756		0.099	0.07- 0.85
	19	2174	27.80	28.14	100.00	0.307				0.31- 0.00
		2175	28.14	28.24	100.00		0.090			0.00- 0.09
		2176	47.14	47.26	100.00		0.107			0.00- 0.11
	21	2177	47.26	48.21	87.37	0.690	0.054		0.107	0.69- 0.16
	21	2178	48.21	48.69	87.50		0.378		0.054	0.00- 0.43
	21	2179	48.69	49.08	48.72	0.171		0.180		0.35- 0.00
		2180	49.08	49.20	100.00		0.108			0.00- 0.11
	20	2185	30.76	31.45	100.00	0.259	0.338			0.26- 0.34
	23	2186	61.28	61.79	74.51	0.337		0.115		0.45- 0.00
	24	2187	61.79	64.03	90.18	0.124	1.651	0.035	0.159	0.16- 1.81

GULF CANADA RESOURCES INC. - COAL DIVISION

28/NOV/83 SIMPLE SAMPLE SUMMARY

APPARENT THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83002										
		2161	10.52	10.62	100.00	0.00	0.10	0.00	0.00	0.00- 0.10
	18	2162	10.62	10.82	100.00	0.20	0.00	0.00	0.00	0.20- 0.00
	18	2163	10.82	11.54	80.55	0.12	0.46	0.07	0.07	0.19- 0.53
	18	2164	11.54	13.67	82.15	1.70	0.05	0.20	0.18	1.90- 0.23
		2165	13.67	13.86	100.00	0.00	0.19	0.00	0.00	0.00- 0.19
		2166	22.41	22.51	100.00	0.00	0.10	0.00	0.00	0.00- 0.10
		2167	22.51	22.76	100.00	0.00	0.25	0.00	0.00	0.00- 0.25
	19	2168	22.76	24.63	82.35	1.54	0.00	0.33	0.00	1.87- 0.00
	19	2169	24.63	24.93	46.66	0.00	0.14	0.00	0.16	0.00- 0.30
	19	2170	24.93	25.91	81.63	0.80	0.00	0.18	0.00	0.98- 0.00
	19	2171	25.91	26.17	65.38	0.00	0.17	0.00	0.09	0.00- 0.26
	19	2172	26.17	26.77	100.00	0.60	0.00	0.00	0.00	0.60- 0.00
	19	2173	26.77	27.80	89.32	0.08	0.84	0.00	0.11	0.08- 0.95
	19	2174	27.80	28.14	100.00	0.34	0.00	0.00	0.00	0.34- 0.00
		2175	28.14	28.24	100.00	0.00	0.10	0.00	0.00	0.00- 0.10
	20	2185	30.76	31.45	100.00	0.30	0.39	0.00	0.00	0.30- 0.39
		2176	47.14	47.26	100.00	0.00	0.12	0.00	0.00	0.00- 0.12
	21	2177	47.26	48.21	87.36	0.77	0.06	0.00	0.12	0.77- 0.18
	21	2178	48.21	48.69	87.50	0.00	0.42	0.00	0.06	0.00- 0.48
	21	2179	48.69	49.08	48.71	0.19	0.00	0.20	0.00	0.39- 0.00
		2180	49.08	49.20	100.00	0.00	0.12	0.00	0.00	0.00- 0.12
	23	2186	61.28	61.79	74.50	0.38	0.00	0.13	0.00	0.51- 0.00
	24	2187	61.79	64.03	90.17	0.14	1.88	0.04	0.18	0.18- 2.06

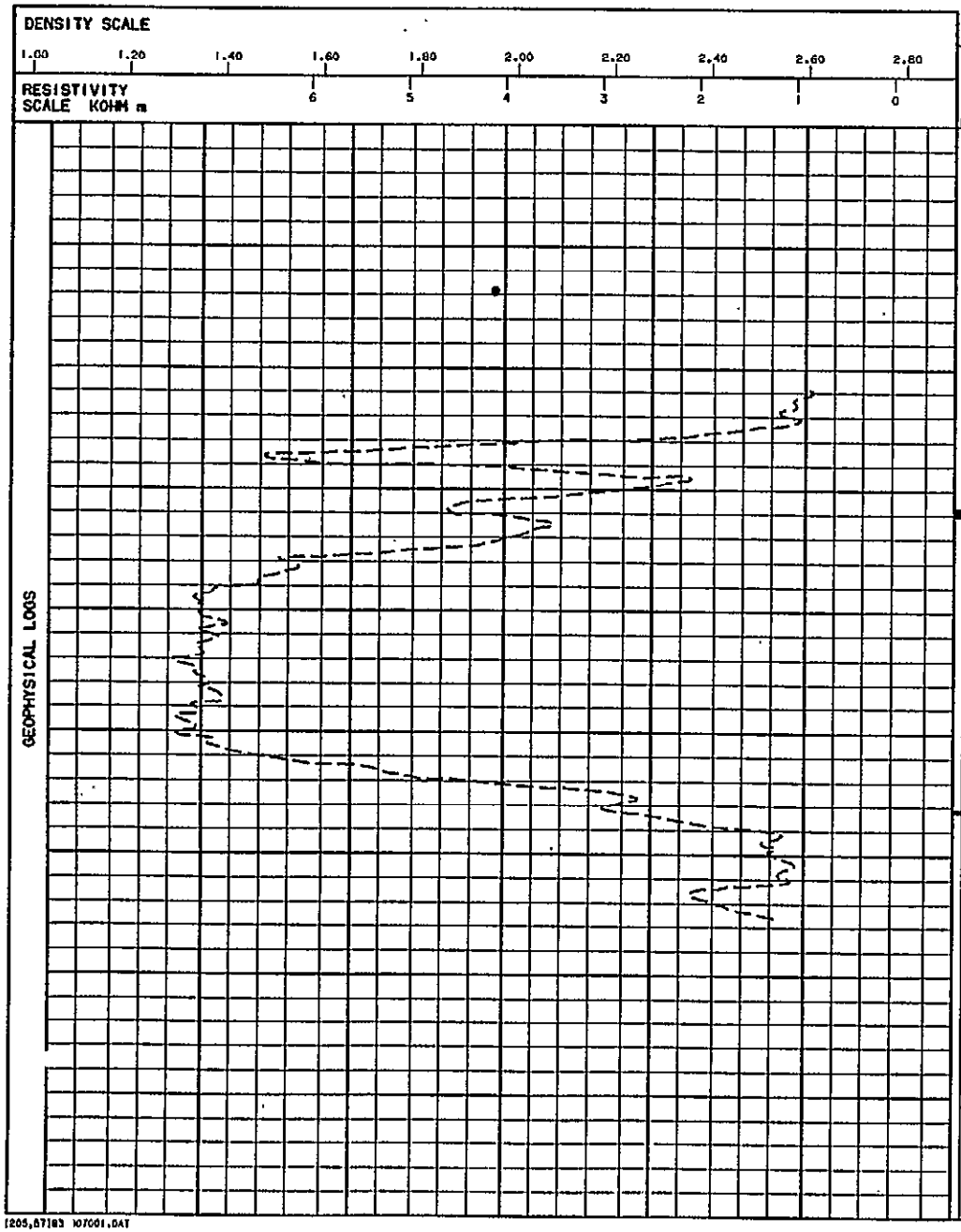
COAL SEAM DATA SHEETS

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83002 SEAM 18 SEAM INTERVAL 10.62m - 13.67m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 1.91m / 2.54



SEAM COMP.	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FSI
123456	10.36		0.06											
			0.10											
	10.62		0.10		100	2161								
	10.62			0.20	100	2162								
			0.18											
	11.10		0.10											
				0.07										
	11.24		(0.07)	(0.07)	80.6	2163								
	11.41		0.10											
	11.54		0.08	0.05										
				0.64										
	12.18						03							
	12.38			(0.20)				1.12	29.54	14.89	54.45	0.54	24.68	1.0
				0.52	82.2	2164								
				0.43										
	13.35		0.05	0.02										
	13.58		(0.18)											
	13.67			0.09	100	2165								
	13.86		0.19											
	14.01		(0.15)											

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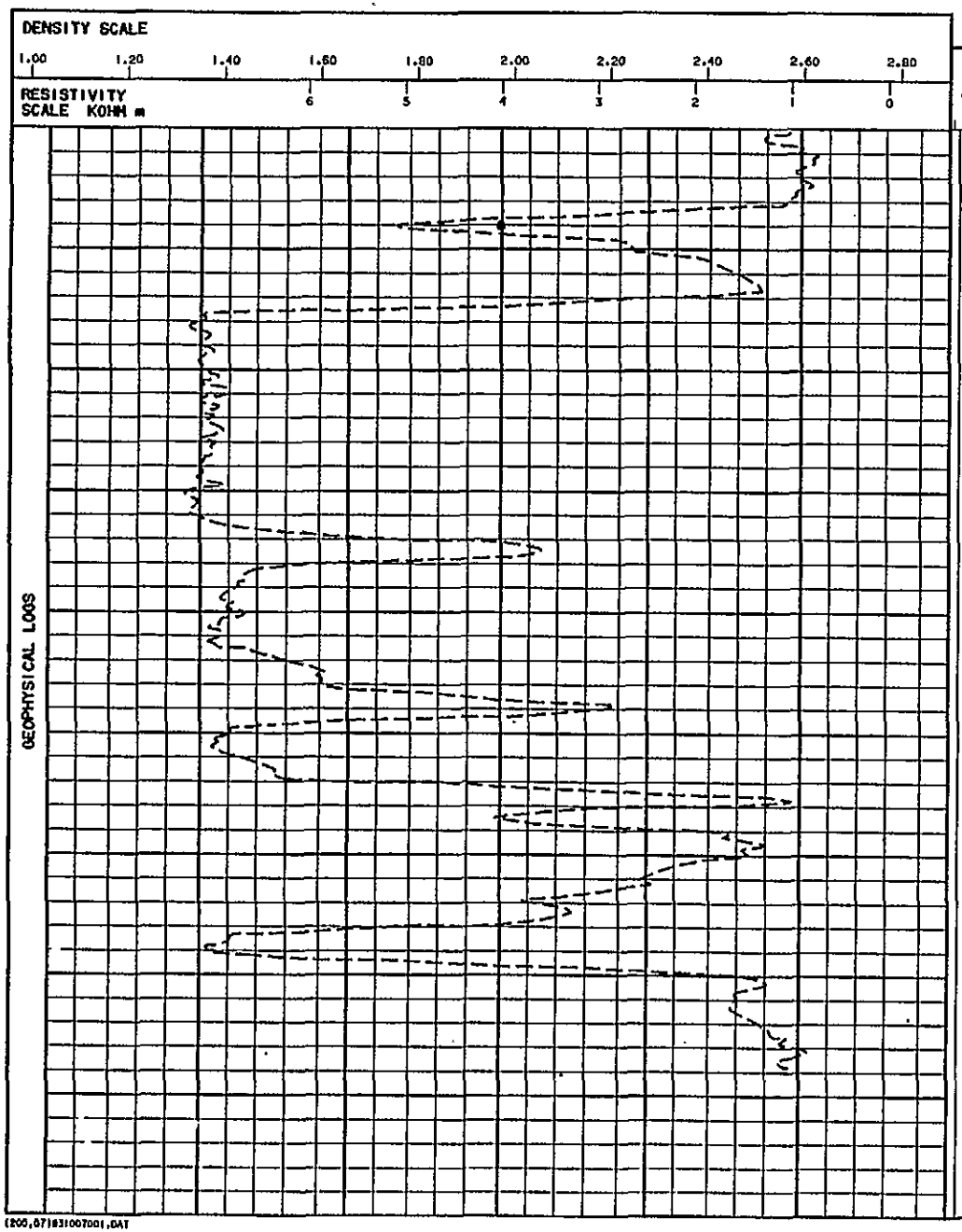
COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83002 SEAM 19 SEAM INTERVAL 22.76 m - 26.77 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 3.08m / 3.58m



SEAM COMP.	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FSI
1 2 3 4 5 6	21.66													
	21.78		0.12											
	22.02		0.24											
	22.41		0.39											
	22.51		0.10		100.0	2166								
	22.76		0.25		100.0	2167								
	23.05			(0.07)										
	23.20			0.22										
				(0.15)										
					82.4	2168								
				1.32										
	24.52													
	24.63			(0.11)										
	24.79		(0.16)											
	24.93		0.14		46.7	2169	04	0.86	17.66	14.88	66.60	0.60	29.01	0.5
				0.80	81.6	2170								
	25.73			0.18										
	25.91													
	26.00		(0.09)		65.4	2171								
	26.17		0.17											
				0.60	100.0	2172								
	26.77		(0.11)											
	26.96		0.08											
	27.03			0.07										
			0.33											
				0.01	89.3	2173		1.06	65.50	11.97	21.47	0.71	9.89	0.0
			0.24				05							
	27.61		0.12											
	27.80		0.07											
				0.34	100.0	2174								
	28.14		0.10		100.0	2175								
	28.45		0.21											

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83002 SEAM 20 SEAM INTERVAL 30.76 m - 31.45 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 0.26m / 0.60

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP.	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S%	MJ/KG	FSI
1 2 3 4 5 6										SPG.=1.50 FLOAT				
	30.47		(0.09)											
	30.56		0.20											
	30.76			0.04										
	30.94		0.14											
			0.02	0.03										
			0.05	0.09										
	31.18		0.07	0.02	100.0	2185		1.49	10.06	18.90	69.55	1.28	31.32	0.5
	31.29			0.11										
	31.45		0.11	0.05										
	31.54		0.09											

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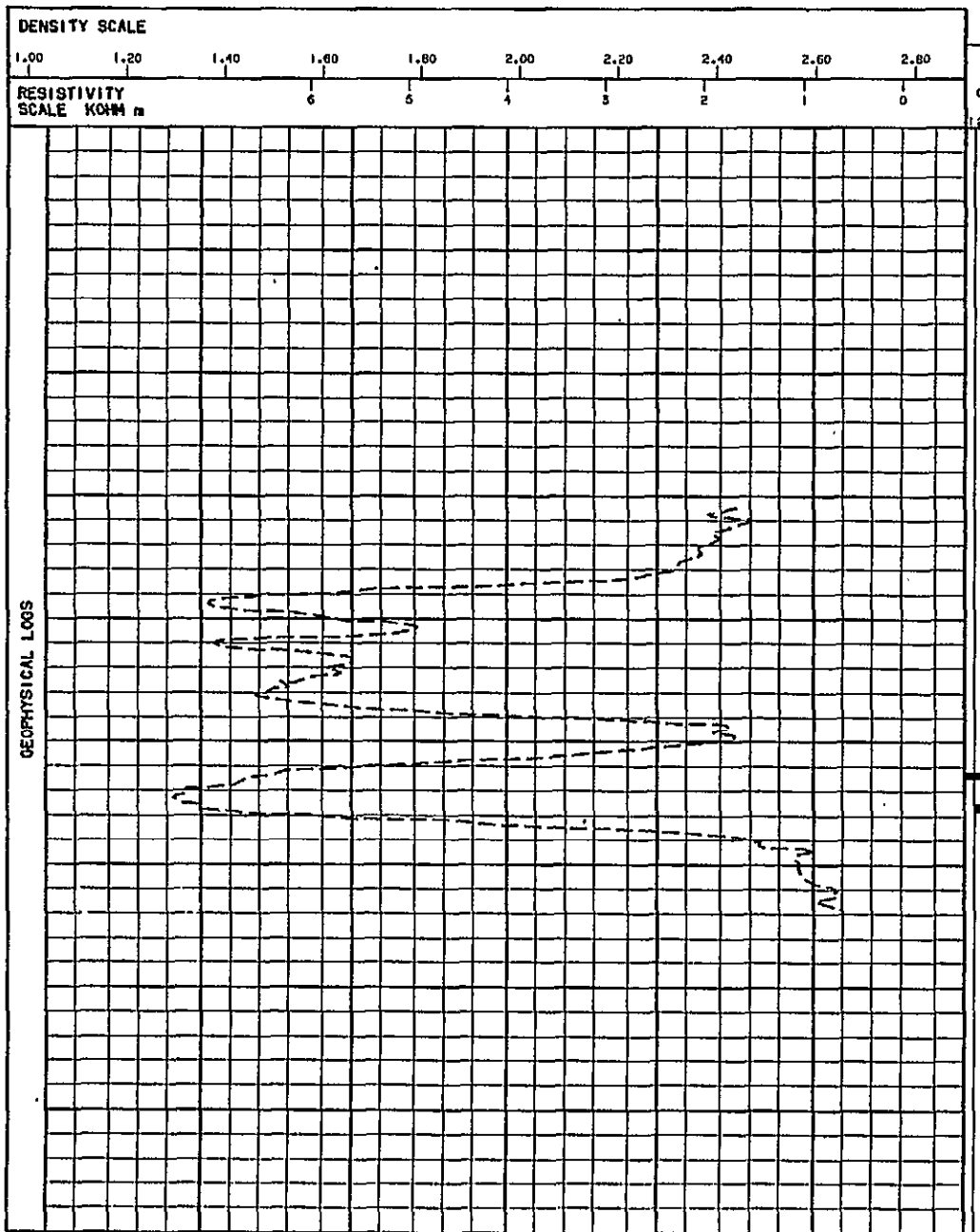
COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY OHMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83002 SEAM 21 SEAM INTERVAL 47.26 m - 49.08 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 0.91m / 1.63m



SEAM COMP.	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S	MJ/KG	FSI
1 2 3 4 5 6	47.14													
	47.26		0.12	0.03	100.0	2176								
	47.48		0.02	0.17										
	47.60		(0.12)											
				0.26	87.4	2177								
			0.04											
	48.21		(0.06)				06	1.11	44.39	13.28	41.22	1.07	18.67	1.0
			0.42		87.5	2178								
	48.69			0.12										
	48.81			(0.20)	48.7	2179								
	49.01			0.07										
	49.08				100.0	2180								
	49.20		0.12											

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83002 SEAM 23 + 24(carb.zone)
SCALE 1:60 FORMATION GETHING

SEAM INTERVALS 61.28 m - 61.79 m
62.32 m - 63.06 m
COAL/COAL + ROCK (TRUE THK.) 0.45m / 0.45m
0.16m / 0.65m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP.	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FSI
1 2 3 4 5 6								SP.G.=1.50 FLOAT						
	60.51													
			0.48											
	60.99		(0.29)											
	61.28			0.25										
	61.53			(0.13)	74.5	2186		0.88	5.66	17.78	75.88	1.48	33.85	3.5
	61.66			0.13										
	61.79		(0.08)											
			0.53											
	62.32			0.08										
	62.40		(0.03)											
			0.48											
	62.96		(0.05)	(0.04)	90.2	2187		0.87	16.77	19.90	62.46	2.76	29.84	8.5
	63.06			0.06										
			0.41											
			(0.02)											
			0.44											
	63.93		0.10											
	64.03													

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GDR-MB-DDH-83003

DATA SOURCE SUMMARY

gcri coal division history proj GDR blk MB ds DDH83003

	dy mo yr
start date	04/08/83
end date	07/08/83

contractor	J.T THOMAS	operator	GULF CANADA
geologist	SWANBERGSON	surveyor	MCELHANNEY

remarks AT BASE OF HOLE BOX 85 IS MISSING ALONG WITH BOXES 87 AND 88(END OF HOLE). DRILLED MIDDLE GETHING FORMATION. B.C. GOVERNMENT TOOK 2 TUFF AND 7 COAL SAMPLES. FULL LOG SUITE ALSO RUN AT A 1:400 SCALE ON one page.

gcri coal division location proj GDR blk MB ds DDH83003

province BC elevation (M) 1067.90

licence / lease number 0000007662

1 utm: zone 10 northing 6167177.80 easting 545266.90

2 lat-long: lat 553901 long 1221651

gcri coal division orientation proj GDR blk MB ds DDH83003

dimensions and orientation:

length (M) 196.00 inclination 60.0 azimuth 231.5

size width ___._ size height

roof strike dip dir

floor strike dip dir

casing depth (M) 6.30 cement(y,_) _ plug(Y,_) Y piez(Y,_) _

aquifer depths (M) ____-__ ____-__

lost circ. depths (m) ____-__ ____-__

DEVIATION SURVEY

CENTURY GEOPHYSICAL CORPORATION

* * * * * * * * VERTICAL DEVIATION * * * * * * * * *

COMPU-LOG VSLI DEVIATION

CLIENT : GULF CANADA RES. INC HOLE ID : GDR-MB-DDH-83-003

LOCATION : GOODRICH-MOBERLY DATE OF LOG : 08-06-83

DATA FROM : VSL2* PROBE : 9055A 0039

TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

DEPTH	TRUE DEPTH	NORTH DEV	EAST DEV	DISTANCE	AZIMUTH	SA	SAB
.00	.00	.00	.00	.00	.0	.0	.0
10.00	8.89	-2.82	-3.59	4.57	231.8	27.2	231.7
20.00	17.78	-5.65	-7.18	9.14	231.8	27.2	231.7
30.00	26.68	-8.39	-10.62	13.70	232.2	27.1	233.1
40.00	35.60	-11.12	-14.11	18.28	232.4	26.9	232.9
50.00	44.54	-13.84	-17.98	22.69	232.4	26.5	232.4
60.00	53.48	-16.56	-21.55	27.18	232.5	26.5	232.7
70.00	62.42	-19.30	-25.10	31.66	232.4	26.6	232.2
80.00	71.36	-22.04	-28.62	36.13	232.4	26.5	232.8
90.00	80.31	-24.79	-32.14	40.60	232.4	26.5	231.9
100.00	89.27	-27.53	-35.63	45.03	232.3	26.3	231.9
110.00	98.23	-30.24	-39.14	49.47	232.3	26.3	232.3
120.00	107.19	-33.02	-42.61	53.91	232.2	26.4	231.2
130.00	116.15	-35.83	-46.06	58.36	232.1	26.4	230.8
140.00	125.10	-38.65	-49.50	62.81	232.0	26.4	230.5
150.00	134.07	-41.47	-52.92	67.24	231.9	26.3	230.5
160.00	143.03	-44.30	-56.32	71.66	231.8	26.2	230.1
170.00	152.01	-47.12	-59.71	76.06	231.7	26.1	230.2
180.00	160.99	-49.94	-63.08	80.46	231.6	26.0	230.1
190.00	169.98	-52.75	-66.44	84.84	231.6	26.0	230.0
TD 195.70	175.11	-54.35	-68.36	87.33	231.5	25.9	230.3

VERTICAL DEVIATION

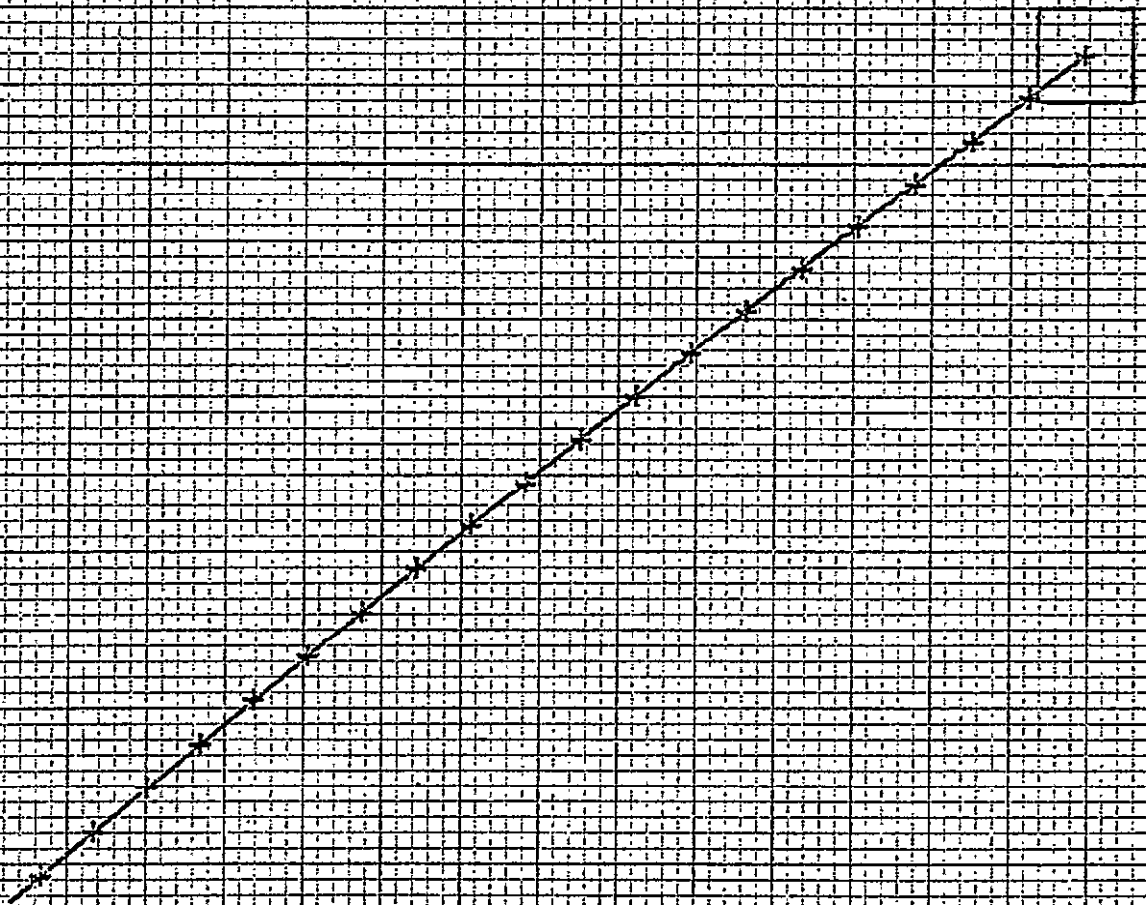
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2

CLIENT : GULF CANADA RES. INC
LOCATION : GOODRICH-MOBERLY
HOLE ID : GDR-MB-DDH-83-003
DATE OF LOG : 08-06-83
PROBE : 9055A 0039

SCALE: 5.00 M/DIV
MAG DECL: 25.0
TRUE DEPTH: 175.1 M
AZIMUTH: 231.5
DISTANCE: 87.33 M

+ = 10.0 M INCR
Δ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ⏃



DESCRIPTIVE LOG

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83/11/28 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	0.00	4.57	4.57			OVERBURDEN	ORIGINALLY SET 4.57M OF CASING BUT A TOTAL OF 6.30M WAS IN PLACE WHEN THE HOLE WAS LOGGED. SOME ROCK + COAL IN COREBOX FROM FIRST CASING SETTING.
35	4.57	5.76	1.19		7	COAL LOSS	
35	5.76	5.93	0.17		7	COAL	VBRKN WTHRD,PULVERIZED MNR MUDDY LENSES
35	5.93	6.03	0.10			MUDSTONE	M.GY.VBRKN
35	6.03	6.10	0.07			MUDSTONE	CARB.BLK.BRKN VBRKN AT TOP,SOFT
35	6.10	6.26	0.16			MUDSTONE	DK.GY.VBRKN SILTY INTBDS
35	6.26	7.36	1.10			MUDSTONE	DK.GY.VBRKN WTHRD.
* 35	7.36	7.90	0.54			MUDSTONE	M.GY.SLD BRKN IN MIDDLE, SLTY INTBDS.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	7.90	8.13	0.23			MUDSTONE	BRKN AS ABV.
32	8.13	8.47	0.34			MUDSTONE	VBRKN AS ABV.
31	8.47	8.66	0.19			MUDSTONE	SLD AS ABV, VBRKN AT TOP.
31	8.66	8.79	0.13			MUDSTONE	CARB.BLK.VBRKN MNR COALY BANDS, FE STN.
29	8.79	9.37	0.58			ROCK LOSS	
* 26	9.37	10.32	0.95			MUDSTONE	DK.GY.SLD MNR SS INTBDS AT BASE, MNR CALCT VEINLETS.
36	10.32	10.47	0.15			SANDSTONE	MG.WEL.LT.GY.THNB.BRKN MNR CALCT VEINLETS.
* 40	10.47	10.73	0.26			SANDSTONE	SLD AS ABV, CALCT VEINS AT BASE.
38	10.73	11.12	0.39			ROCK LOSS	
34	11.12	12.43	1.31			MUDSTONE	DK.GY.BRKN CARB AT TOP, MNR SLTY INTBDS, MNR CALCT VEINLETS, CALC.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	12.43	12.53	0.10			MUDSTONE	BRKN AS ABV.
30	12.53	12.57	0.04			COAL	SLD SOFT & WTHRD.
30	12.57	12.59	0.02			COAL	VBRKN WTHRD.
29	12.59	13.05	0.46			MUDSTONE	M.GY.SLD CALCT VEINLETS, VBRKN AT BASE.
* 25	13.05	14.25	1.20			MUDSTONE	DK.GY.SLD CALCT INFILLING ON FRAC, SLTY TOWARDS B ASE.
* 18	14.25	14.55	0.30			MUDSTONE	LT-M.GY.SLD SLTY AT TOP, CALC.
* 17	14.55	14.86	0.31			SANDSTONE	FG.MOD.LT-M.GY.LAM.SLD SLTY MUDST LAM, CALC.
17	14.86	15.11	0.25			SANDSTONE	BRKN AS ABV, CALC.
16	15.11	15.88	0.77			SANDSTONE	FG.MOD.LT-M.GY.THNB.SSD.SLD SLTY MUDST INTBDS AND LAM, CALC, MNR CO ALY WISPS.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	15.88	16.04	0.16			MUDSTONE	M.GY.SLD MNR SLTY INTBDS, CORE BRKN AT TOP, IRREGULAR FRAC, RUST WTHRD ON FRAC.
* 14	16.04	16.58	0.54			MUDSTONE	SLD AS ABV.
* 13	16.58	17.09	0.51			SANDSTONE	FG.MOD.LT-M.GY.THNB.XBDG.SLD MUDST INTBDS & LAM, XBDG- TOPS DOWN, COALY WISPS.
* 28	17.09	18.11	1.02			MUDSTONE	DK.GY.SLD CALC, CORE BRKN AT BASE, MNR SLTY INTBDS.
23	18.11	18.56	0.45			MUDSTONE	BRKN AS ABV.
21	18.56	18.85	0.29			MUDSTT	DK.GY.VBRKN RUST STN ON FRAC, AS ABV.
19	18.85	19.05	0.20			ROCK LOSS	
18	19.05	19.30	0.25			ROCK LOSS	
16	19.30	19.45	0.15			MUDSTONE	CARB.BLK.VBRKN LISTRIC SURF, COALY LNS, CORE ROTATED.
14	19.45	20.10	0.65			ROCK LOSS	

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
11	20.10	20.34	0.24			MUDSTONE	M.GY.BRKN
* 10	20.34	20.35	0.01			TUFF	LT.GY.SLD B.C. MINES TUFF SAMPLE R83-89.
10	20.35	20.59	0.24			MUDSTONE	M.GY.BRKN
11	20.59	21.04	0.45			ROCK LOSS	
11	21.04	21.29	0.25			MUDSTONE	VBRKN PULVERIZED, AS ABV.
11	21.29	21.74	0.45			ROCK LOSS	
12	21.74	22.14	0.40			ROCK LOSS	
12	22.14	22.24	0.10			MUDSTONE	VBRKN AS ABV.
12	22.24	22.29	0.05			MUDSTONE	CARB.BLK.BRKN LISTRIC SURF, COALY STRGS.
13	22.29	22.54	0.25			ROCK LOSS	
14	22.54	24.05	1.51			MUDSTONE	DK.GY.BRKN MNR CALCT VEINLETS, OCC COALY LNS & STR GS, CALCT WISPS THROUGHOUT.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
15	24.05	24.40	0.35			ROCK LOSS	
15	24.40	24.64	0.24			MUDSTONE	VBRKN AS ABV.
16	24.64	25.18	0.54			MUDSTONE	DK.GY.SLD MNR CALCT VEINLETS & COALY LNS AT BASE, CALCT WISPS.
17	25.18	26.73	1.55			MUDSTONE	DK.GY.SLD HAIRLINE FRAC DISPLACEMENT OF CALCT VEI NLETS, ABNT VEINLETS, RUST WTHRING ALON G MNR IRREGULAR FRAC.
18	26.73	27.13	0.40			MUDSTONE	DK.GY.SLD
19	27.13	27.17	0.04			COAL	VBRKN PULVERIZED.
19	27.17	27.30	0.13			MUDSTONE	CARB.DK.GY.VBRKN LISTRIC SURF.
19	27.30	27.57	0.27			MUDSTONE	DK.GY.VBRKN

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
19	27.57	27.75	0.18			MUDSTONE	DK.GY.SLD CALCT VEINLETS.
* 20	27.75	28.57	0.82			MUDSTONE	SLD AS ABV, CORE BRKN AT TOP, CALC, MNR SLT Y INTBDS.
18	28.57	28.69	0.12			MUDSTONE	SLD AS ABV.
17	28.69	29.42	0.73			ROCK LOSS	
16	29.42	29.67	0.25			MUDSTONE	VBRKN AS ABV, LISTRIC SURF, MNR COALY LAM.
15	29.67	29.83	0.16			ROCK LOSS	
14	29.83	30.07	0.24			MUDSTONE	M-DK.GY.THNB.SSD.SLD SLTY INTBDS, IRREGULAR CALCT VEINS.
* 12	30.07	31.22	1.15			MUDSTONE	THNB.SSD.SLD AS ABV
13	31.22	31.36	0.14			MUDSTONE	AS ABV.
13	31.36	31.47	0.11			SANDSTONE	FG.WEL.LT.GY.LAM.XBDG.SLD SLTY MUDST LAM, TOPS UP?.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 14	31.47	32.56	1.09			SANDSTONE	FG.MOD.LT-M.GY.LAM.SLD MNR SSD, FRAC ALONG BDG, THNBD TOWARDS BASE, SLTY INTBDS, GY-GN COLOR IN PART, CARB WISPS.
17	32.56	33.60	1.04			MUDSTONE	M.GY.SLD CALC, HARD, SILICIOUS FRAC, ABNT QTZ/CALCT VEINS IN UPPER SECTION, GY-GN COLOR IN PART, CARB WISPS, DISTINCT MARKER UNIT.
20	33.60	34.01	0.41			MUDSTONE	SLTY.M.GY.SSD.SLD TRANSITIONAL FROM UPPER UNIT.
21	34.01	34.21	0.20			MUDSTONE	VBRKN AS ABV.
21	34.21	34.51	0.30			ROCK LOSS	
23	34.51	35.19	0.68			MUDSTONE	DK.GY.BRKN LISTRIC SURF AT BASE, HIGH ANGLE CALCT VEIN.
24	35.19	35.49	0.30			ROCK LOSS	
26	35.49	36.19	0.70		8	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	36.19	36.22	0.03		8	COAL	C-4.PWRD PULVERIZED TO A POWDER.
* 28	36.22	36.68	0.46			MUDSTONE	M.GY.SLD VBRKN AT TOP, ABNT COALY WISPS.
27	36.68	37.51	0.83			MUDSTONE	DK.GY.BIOTR.SLD MNR SLTY INTBDS, MNR COALY STRGS, CALC.
27	37.51	37.64	0.13			MUDSTONE	DK.GY.VBRKN LISTRIC SURF, COALY STRGS.
27	37.64	38.11	0.47			MUDSTONE	DK.GY.SLD NON CALC.
27	38.11	38.14	0.03			COAL	C-5.VBRKN
26	38.14	38.43	0.29			MUDSTONE	DK.GY.BRKN NON CALC.
26	38.43	38.53	0.10			MUDSTONE	DK.GY.VBRKN ABNT PWRD COAL.
26	38.53	38.75	0.22			ROCK LOSS	
26	38.75	39.34	0.59	02182	9	COAL LOSS	
25	39.34	40.09	0.75	02182	9	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	40.09	40.70	0.61	02182	9	COAL	C-4.VBRKN
24	40.70	41.67	0.97	02182	9	COAL	C-4.VBRKN PULVERIZED.
24	41.67	41.69	0.02	02182	9	COAL	C-3.BRKN
23	41.69	42.44	0.75	02182	9	COAL LOSS	
23	42.44	42.65	0.21	02182	9	COAL LOSS	
23	42.65	43.05	0.40	02182	9	COAL	C-4.BRKN
23	43.05	43.15	0.10	02182	9	COAL	C-4.SLD
22	43.15	43.48	0.33	02182	9	COAL	C-4.BRKN
22	43.48	43.57	0.09	02182	9	COAL	C-4.SLD MNR MUDDY INTBDS.
22	43.57	43.60	0.03	02182	9	COAL	C-4.DK.GY.VBRKN

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	43.60	43.66	0.06			MUDSTONE	CARB.DK.GY.BRKN COALY STRGS.
22	43.66	44.16	0.50			ROCK LOSS	
21	44.16	44.91	0.75			MUDSTONE	SLD SLTY TOWARDS BASE, MNR COALY STRGS TOWA RDS TOP.
21	44.91	45.66	0.75			MUDSTONE	M-DK.GY.WRMBU.SLD FG SS INTBDS, CALC.
* 20	45.66	46.71	1.05			MUDSTONE	SLD MNR SLTY INTBDS, LISTRIC SURF, MNR CALC T VEIN, FRACS PARALLELING BDG, CALC.
21	46.71	46.98	0.27			MUDSTONE	SLD AS ABV.
23	46.98	48.19	1.21			MUDSTONE	DK.GY.SLD SLTY AT TOP, ABNT CALCT VEINLETS, CALC.
24	48.19	48.35	0.16			MUDSTONE	BRKN AS ABV.
25	48.35	49.04	0.69			MUDSTONE	SLD AS ABV, MNR SSD.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
26	49.04	49.58	0.54			MUDSTONE	SLD AS ABV, CALC.
27	49.58	49.78	0.20			ROCK LOSS	
* 28	49.78	50.58	0.80			SILTSTONE	M.GY.THNB.SLD MUDST INTBDS, CALC, CORE BRKN AT TOP, A BNT CALCT VEINS & VEINLETS PARALLEL AND NORMAL TO BDG, SSD IN MIDDLE.
27	50.58	50.83	0.25			MUDSTONE	DK.GY.SLD MNR CALCT VEINLETS, CALC.
26	50.83	51.25	0.42			MUDSTONE	BRKN AS ABV, CALC.
24	51.25	52.80	1.55			SILTSTONE	DK.GY.SLD BRKN AT TOP, CALC, CALCT VEINS AT TOP.
* 22	52.80	52.89	0.09			SILTSTONE	M-DK.GY.LAM.WRMBU.SLD SLTST/MUDST INTBDS, GRADED BDG, TOPS UP ?.
22	52.89	53.20	0.31			SILTSTONE	SLD AS ABV, CALCT VEINS IN BASAL HALF.
23	53.20	53.80	0.60			SILTSTONE	WRMBU.SLD AS ABV, TOPS UP, CALC.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	53.80	55.29	1.49			MUDSTONE	DK.GY.SSD.SLD CALCT VEINLETS IN MIDDLE, BASAL SECTION SPECKLED WITH POSSIBLE FOSSILS CIRCULAR IN SHAPE <1.0MM IN DIAMETER AND RANDOMLY POSITIONED, CALC.
25	55.29	55.95	0.66			MUDSTONE	SSD.SLD AS ABV.
26	55.95	57.33	1.38			MUDSTONE	SSD.SLD AS ABV.
27	57.33	58.62	1.29			MUDSTONE	SLD AS ABV
28	58.62	58.91	0.29			MUDSTONE	DK.GY MNR SLTY INTBDS, LACKS PREVIOUSLY DESCRIBED FOSSILS.
* 28	58.91	59.44	0.53			MUDSTONE	SLD AS ABV.
25	59.44	61.51	2.07			MUDSTONE	SSD.SLD MNR SLTY INTBDS, CALC, AS ABV.
22	61.51	61.62	0.11			MUDSTONE	SLTY.DK.GY.SLD CALC.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
22	61.62	61.89	0.27			SANDSTONE	FG,M.GY.THNB.SLD COALY WISPS, CALC.
21	61.89	61.99	0.10			SANDSTONE	SLD AS ABV, LAM AT BASE, CALC.
21	61.99	62.11	0.12			MUDSTONE	DK.GY.SLD CALC.
* 19	62.11	63.65	1.54			SANDSTONE	MG.MOD.LT-M.GY.XBDG.SLD CALC. SLTY MUDST INTBDS AND LAM. WRMBUR S, TOPS UP.
19	63.65	63.83	0.18			SANDSTONE	SLD AS ABV.
19	63.83	63.86	0.03			COAL	C-4.VBRKN
* 19	63.86	65.15	1.29			MUDSTONE	DK.GY.BRKN COAL STRGS.
22	65.15	65.19	0.04			MUDSTONE	CARB.BLK.SLD
23	65.19	65.47	0.28			MUDSTONE	DK.GY.SLD COAL STRGS (B.C. MINES SAMPLE #C83-269)

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	65.47	65.67	0.20			MUDSTONE	SLD AS ABV, NON CALC.
26	65.67	66.72	1.05			MUDSTONE	DK.GY.SLD MNR COAL BANDS IN UPPER HALF, NON CALC.
29	66.72	66.82	0.10			SANDSTONE	FG.LT.GY.VTHNB.SLD
* 30	66.82	67.29	0.47			MUDSTONE	SLD SLTY MUDST INTBDS.
29	67.29	67.33	0.04			MUDSTONE	BRKN AS ABV.
29	67.33	67.48	0.15			MUDSTONE	CARB.BLK.BRKN
29	67.48	67.77	0.29			ROCK LOSS	
27	67.77	69.24	1.47			MUDSTONE	DK.GY.SLD MNR SLTY INTBDS, MNR COAL STRGS, CALCT VEINLETS
26	69.24	69.29	0.05			MUDSTONE	CARB.BLK.SLD COAL STRGS.

* DENOTES MEASURED BCA

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 25	69.29	69.85	0.56			MUDSTONE	SSD.SLD XBDG, TOPS UP, WRMBUR, LAM, SLTY INTBDS IN MIDDLE, NON CALC TOWARDS BASE.
26	69.85	70.38	0.53			MUDSTONE	M.GY.THNB.SSD.SLD SLTY INTBDS, POSSIBLE WRMBUR, TOPS UP, CALC.
27	70.38	70.83	0.45			MUDSTONE	DK.GY.SLD MNR COAL STRGS AT BASE, NON CALC, CALCT VEINLETS AT BASE.
28	70.83	71.14	0.31			COAL LOSS	
28	71.14	71.18	0.04			COAL	C-2.VBRKN B.C. MINES SAMPLE # C83-270.
29	71.18	71.28	0.10			MUDSTONE	CARB.BRKN LISTRIC SURF.
29	71.28	71.55	0.27			MUDSTONE	DK.GY.SLD ABNT COAL STRGS, NON CALC.
* 30	71.55	72.29	0.74			MUDSTONE	M-DK.GY.SSD.SLD CALC, MNR SLTY INTBDS TOWARDS BASE, PL-FOS, PYRITE BLEBS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	72.29	72.63	0.34			MUDSTONE	SLD AS ABV.
31	72.63	73.82	1.19			SANDSTONE	VFG.WEL.M.GY.SSD.SLD MNR CALCT VEINLETS.
32	73.82	73.95	0.13			SANDSTONE	SLD AS ABV.
32	73.95	74.43	0.48			SILTSTONE	M.GY.SLD CALC.
33	74.43	75.30	0.87			SILTSTONE	SLD AS ABV.
34	75.30	76.42	1.12			MUDSTONE	GY.THNB.SLD SLTY INTBDS UP TO 3MM, MNR CALCT VEINS & VEINLETS.
34	76.42	76.91	0.49			MUDSTONE	GY.SLD AS ABV, CALC.
* 35	76.91	77.90	0.99			SILTSTONE	M.GY.THNB.SLD SSY NEAR BASE, ANGULAR SLTY MUDST RIP UP IN MIDDLE UP TO 7MM IN LENGTH, CALC.
34	77.90	78.45	0.55			SANDSTONE	FG.WEL.LT-M.GY.THNB.SLD CALC, LAM AT TOP, CALCT VEINLETS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	78.45	79.97	1.52			SANDSTONE	FG.MOD.LT-M.GY.THNB.XBDG.SLD TOPS UP, SLTY MUDST INTBDS, SOME SSD, C ALC.
* 30	79.97	80.37	0.40			SANDSTONE	FG.MOD.M.GY.LAM.SLD SLTST LAM.
32	80.37	80.94	0.57			SANDSTONE	SLD CALC, AS ABV, MUDST RIP UP AT BASE, TOP S UP, MNR COAL STRGS AT BASE.
35	80.94	81.61	0.67			MUDSTONE	M.GY.SLD SLTY INTBDS, CALCT VEINLETS, CALC.
38	81.61	82.41	0.80			SANDSTONE	FG.MOD.LT-M.GY.THNB.SLD ABNT CALCT VEINLETS, VBRKN AT BASE, MUD ST RIP UP, CALC, MNR COAL BLEBS.
41	82.41	82.93	0.52			SANDSTONE	SLD AS ABV, INCREASING MUDST TOWARDS BASE.
43	82.93	83.38	0.45			SILTSTONE	M.GY.SSD.SLD 1 CM CALCT VEIN AT TOP.
* 46	83.38	84.31	0.93			MUDSTONE	SLTY.DK.GY.SLD CALC,MNR CALC VEINS AND VEINLETS ,LAM T OWARDS BASE,CORE BRKN IN MIDDLE

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	84.31	84.36	0.05			MUDSTONE	SLD AS ABV.
45	84.36	85.27	0.91			SILTSTONE	M.GY.THNB.SLD SLTY MUDST INTBDS, CALC.
* 45	85.27	85.79	0.52			SANDSTONE	FG.MOD.M-DK.GY.SLD SLTY INTBDS & LAM, XBDG, TOPS UP.
42	85.79	85.98	0.19			SANDSTONE	BRKN AS ABV.
40	85.98	86.25	0.27			SANDSTONE	SLD AS ABV, CALCT VEIN AT TOP.
38	86.25	86.60	0.35			SANDSTONE	SLD AS ABV.
32	86.60	87.51	0.91			SANDSTONE	MG.MOD.M.GY.SLD ABNT CALCT VEINS & VEINLETS AT BASE, MN R DISPLACEMENT ON HAIRLINE FRACS, CALC, MNR CARB STRGS IN BASAL HALF.
27	87.51	87.79	0.28			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
23	87.79	88.49	0.70			MUDSTONE	DK.GY.BRKN LISTRIC SURF, MNR COAL STRGS NEAR BASE, NON CALC.
20	88.49	88.57	0.08			MUDSTONE	CARB.BLK.SLD COAL STRGS.
19	88.57	88.70	0.13			MUDSTONE	DK.GY.SLD LISTRIC SURF.
18	88.70	88.76	0.06			COAL	C-4.VBRKN MNR MUDST INTBDS.
* 13	88.76	89.95	1.19			MUDSTONE	SLD BRKN AT TOP, ABNT COAL LNS AT TOP, MNR SLTY INTBDS.
19	89.95	90.22	0.27			MUDSTONE	CARB.BLK.BRKN VBRKN AT BASE. B.C.MINES SAMPLE # C83-271 (CARB STRGS).
21	90.22	90.41	0.19			MUDSTONE	SLTY.M.GY.SLD CALC.
25	90.41	91.05	0.64			MUDSTONE	SLD AS ABV, COALY STRGS IN MIDDLE.
28	91.05	91.07	0.02			COAL	VBRKN PULVERIZED.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
28	91.07	91.17	0.10			MUDSTONE	DK.GY.BRKN SLTY TOWARDS BASE.
29	91.17	91.27	0.10			MUDSTONE	CARB.GY.VBRKN
31	91.27	91.62	0.35			ROCK LOSS	
34	91.62	92.00	0.38			MUDSTONE	DK.GY.BRKN VBRKN AT BASE, LISTRIC SURF, MNR COAL S TRGS.
37	92.00	92.20	0.20			MUDSTONE	SLD AS ABV.
38	92.20	92.26	0.06			MUDSTONE	SLTY.M.GY.BRKN CALCT VEINS, NON CALC.
* 40	92.26	92.66	0.40			MUDSTONE	M.GY.THNB.SLD SLTY INTBDS AT TOP, COAL LNS, NON CALC.
38	92.66	92.90	0.24			MUDSTONE	CARB.DK.GY.SLD MNR THIN COAL PTGS, MNR SSY LNS.
36	92.90	92.96	0.06			COAL	C-1.VBRKN CARB MUDST INTBDS, TRACE SULFIDE, PWRD.
35	92.96	93.29	0.33			ROCK LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	93.29	93.53	0.24			MUDSTONE	CARB.DK.GY.BRKN V THIN COAL PTGS (MNR), THIN COAL BAND (1 CM C-1) AT TOP SUB PARALLEL.
31	93.53	93.65	0.12			MUDSTONE	SLD AS ABV, POLISHED SURF.
28	93.65	94.55	0.90			ROCK LOSS	
24	94.55	94.59	0.04			MUDSTONE	SLD AS ABV, AT BASE BRIGHT COAL PTGS (C-1).
24	94.59	94.65	0.06			SILTSTONE	CLYY.M.GY.SLD MNR COAL PTGS.
* 23	94.65	94.75	0.10			SILTSTONE	CLYY.M.GY.SLD
22	94.75	95.13	0.38			SANDSTONE	FG.WEL.M.GY.THNB.SSD.SLD MNR CALCT VEINLETS, CALC, WRMBUR, MUDST LNS.
19	95.13	95.56	0.43			SANDSTONE	CLYY.VFG.MOD.M.GY.SLD MNR CALCT VEINING.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 15	95.56	96.52	0.96			SANDSTONE	CLYY.FG-.MOD.M.GY.THNB.SLD MUDST INTBDS(THN), MNR XBDG, THN CALCT VEINING IN SPORADIC INTERVALS CUT OBLIQUE TO BDG (1-2MM), CALC, MNR SSD THROUGHOUT, TOPS UP, AT BASE CALCT FISSURING APPEARS TRUNCATED BY B/P OF UPPER UNIT-POSS MOVEMENT. YEL STN ON CALCT VEIN.
17	96.52	96.90	0.38			SILTSTONE	CLYY.DK.GY TRACE CARB TO COALY VEINLETS, OCC SSY LNS & WRMBUR, CHONDRITES.
18	96.90	97.58	0.68			SANDSTONE	FG-.MOD.M-DK.GY.SSD.SLD CALC, XBDG TOPS UP, THN SLTST INTBDS, MNR SSD IN UPPER UNIT, OCC CALCT VEINING OBLIQUE TO BDG, TRACE PYRITE.
* 20	97.58	97.99	0.41			SANDSTONE	AS ABV, MUDST INTBDS INCREASING TOWARDS BASE.
22	97.99	98.26	0.27			SANDSTONE	FG-.MOD.M-DK.GY.SLD MUDST INTBDS, CALC, MNR CALCT VEINS, GRADED BDG.
23	98.26	98.44	0.18			SANDSTONE	SLD AS ABV, MNR XBDG.
25	98.44	99.06	0.62			SILTSTONE	CLYY.DK.GY.SLD CALC, FAINT BDG.

* DENOTES MEASURED BCA

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
27	99.06	99.09	0.03			SILTSTONE	VBRKN AS ABV.
28	99.09	99.47	0.38			ROCK LOSS	
30	99.47	100.02	0.55			SILTSTONE	SLD AS ABV, MNR FG SS LNS (DISCONTINUOUS).
34	100.02	100.89	0.87			SILTSTONE	CLYY.SSD.SLD AS ABV, SLIGHTLY CALC & CARB, OCC SSY L NS, POSSIBLE CHONDRITES? AT 50CM FROM T OP.
38	100.89	101.52	0.63			SANDSTONE	FG-.MOD.M-DK.GY.SLD MNR MUDST INTBDS, MNR WRMBUR, CALCT VEI NING UPTO 3MM THICK, SLIGHTLY CALC, XBD G NEAR BASE, TOPS UP.
* 40	101.52	101.71	0.19			SANDSTONE	SLD AS ABV.
40	101.71	101.87	0.16			MUDSTONE	DK.GY.SLD SLTY INTBDS.
40	101.87	102.02	0.15			SANDSTONE	FG-.MOD.M.GY.THNB.SLD MUDST & SLTST INTBDS, BANDED.
40	102.02	102.70	0.68			MUDSTONE	SLTY.DK.GY.SSD.SLD SSD INFILLED WITH SAND.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	102.70	103.02	0.32			MUDSTONE	DK.GY.SLD BANDED, SLIGHTLY CARB AT BASE.
39	103.02	103.30	0.28			MUDSTONE	CARB.SLD COAL PTGS, MNR COALY PL CASTS, SLTY TOW ARDS BASE.
39	103.30	103.40	0.10			ROCK LOSS	
39	103.40	103.48	0.08			COAL	C-4.BRKN
39	103.48	103.68	0.20			ROCK LOSS	
39	103.68	103.69	0.01			TUFF	SLTY.SLD
39	103.69	103.70	0.01			COAL	C-1.BRKN (BAND) B.C. MINES SAMPLE #C83-272.
39	103.70	103.84	0.14	02183		TUFF	M.GY.SLD CARB & SLTY, NON CALC, TUFFACEOUS, MATR IX COMPRISED PELLET LIKE SS & MUDST, DI SSEMINATED SULFIDES. B.C. MINES SAMPLE # 83-88.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
39	103.84	104.59	0.75	02184	10	COAL LOSS	
38	104.59	104.90	0.31	02184	10	COAL	C-4.VBRKN
38	104.90	104.96	0.06	02184	10	COAL	C-1.SLD
38	104.96	105.00	0.04	02184	10	COAL	C-1.BRKN
38	105.00	105.42	0.42	02184	10	COAL LOSS	

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	105.42	105.56	0.14	02184	10	COAL	C-5.BRKN MNR CARB MUDST INTBDS, SOME C-1 BANDS.
38	105.56	105.95	0.39			MUDSTONE	SLTY.DK.GY.SLD
37	105.95	106.36	0.41			SILTSTONE	CLYY.M.GY.SLD MNR CARB PTGS.
* 37	106.36	107.40	1.04			SANDSTONE	VFG.MOD.M.GY.SLD SLIGHTLY CALC, FAINT BDG.
42	107.40	107.44	0.04			SANDSTONE	SLD AS ABV.
* 52	107.44	109.41	1.97			SANDSTONE	FG-.LT-M.GY.SLD CALC, SOME SSD, WAVY TO LENTICULAR, SLT ST LNS, CALCT VEINING (UP TO 3MM) OBLIQUE TO BDG.
48	109.41	109.50	0.09			SANDSTONE	LT.GY.SLD AS ABV.
48	109.50	109.58	0.08			SANDSTONE	CLYY.VFG.WEL.M.GY.SLD
48	109.58	109.64	0.06			SANDSTONE	FG.MOD.LT.GY.THNB.SLD SLTST INTBDS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
48	109.64	109.70	0.06			SANDSTONE	FG.M.GY MNR MG SS LNS.
* 47	109.70	109.98	0.28			SANDSTONE	FG.MOD.LT.GY.SLD FAINT BDG.
47	109.98	110.05	0.07			SANDSTONE	CLYY.VFG.MOD.M.GY.WRMBU.SLD CARB & ARGILLACEOUS, RIP UP CLASTS AT T OP, MNR SKS.
47	110.05	110.32	0.27			SANDSTONE	FG-.WEL.LT-M.GY GRADED BDG, MNR MUDST INTBDS, CALC, MNR SKS - 2CM.
47	110.32	110.34	0.02			SANDSTONE	FG.M.GY.SLD CALCT FRAC, BRECIATED, FRAC ACROSS THIS ZONE SHOW MOVEMENT, MNR SKS.
47	110.34	110.46	0.12			SANDSTONE	FG.WEL.LT-M.GY.SLD MNR SLTST LNS UP TOP, CALC, GRADED BDG, CALCT VEIN AT BASE.
46	110.46	110.72	0.26			SANDSTONE	FG.LT-M.GY.THNB.SLD CALCT VEINLETS AT BASE, CALCT VUG PERPI NDICULAR TO BDG.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
46	110.72	110.82	0.10			SANDSTONE	SLD AS ABV, THN ARG SLTST INTBDS, NUMEROUS CALCT VEINS SOME OF WHICH SHOW MNR MOVE MENT ALONG B/P.
46	110.82	111.09	0.27			SANDSTONE	FG-.LT.GY.SLD CALCT FRAC IN UPPER UNIT, MNR MOVEMENT SHOWN.
46	111.09	111.40	0.31			SANDSTONE	FG-.LT-M.GY.SLD SLTST & MUDST INTBDS, SOME RIP UP CLAST S, MNR COAL PTGS, MNR CALCT VEINS.
46	111.40	111.46	0.06			SANDSTONE	FG.LT.GY.SLD CALCT FRAC W CRYSTALS AT BASE OBLIQUE T O BDG.
46	111.46	111.66	0.20			SANDSTONE	FG.MOD.LT.GY.SLD MUDST RIP UP CLASTS, TOPS UP, SKS, SOME PYRITE WITH CALCT VEIN FRAC FILL.
45	111.66	111.94	0.28			MUDSTONE	M.GY.SLD SLTST & MNR SS INTBDS, SOME CARB PTGS, MNR SSD.
45	111.94	112.05	0.11			SANDSTONE	FG.MOD.GY.THNB.SLD TRACE OF CARBS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 45	112.05	112.38	0.33			SANDSTONE	FG.MOD.M.GY.SLD MUDST & SLTST INTBDS, WAVY TO LENTICULAR BDG, MNR SSD, MNR CALCT FRAC, TENSION GASHES, CALC.
45	112.38	112.64	0.26			MUDSTONE	DK.GY.SSD.SLD SLTST & SS INTBDS, ABRUPT CTC AT BASE FROM COAL & SKS.
45	112.64	113.35	0.71			SANDSTONE	FG.LT.GY.SLD HIGHLY BRECCIATED THROUGHOUT, GRADING TOWARDS SLTST & MUDST & SS INTBDS TOWARDS BASE, NUMEROUS CALCT FRAC & GASHES (1 CM WIDE), BDG DISRUPTIVE, POSSIBLE FAULT, SKS, CALC, MNR SULFIDES.
45	113.35	113.37	0.02			SILTSTONE	CLYY.M.GY.BRKN POLISHED SURF.
45	113.37	113.53	0.16			SILTSTONE	M-DK.GY.SLD SLIGHTLY ARG, POLISHED SURF BRKN, MNR CALCT VEINLETS, CALC.
* 45	113.53	114.85	1.32			SANDSTONE	FG.MOD.M.GY.THNB.SLD SLTST & MUDST INTBDS, SOME SSD, OCC CALCT VEINLETS, MNR WRMBUR, BECOMING MORE ARG TOWARDS BASE, MNR PL CASTS & COALY FRAGS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
45	114.85	114.97	0.12			SANDSTONE	FG.MOD.LT-M.GY.SLD MNR PYRITE, MNR MUDST, MNR SSD.
45	114.97	115.37	0.40			ROCK LOSS	
45	115.37	115.80	0.43			MUDSTONE	CARB.DK.GY.BRKN NUMEROUS COAL PTGS, SOME PL CASTS, PWRD COAL, MNR SKS.
45	115.80	116.03	0.23			MUDSTONE	CARB.BLK.BRKN AS ABV, THN CALCT VEIN NEAR BASE.
45	116.03	116.51	0.48			ROCK LOSS	
45	116.51	116.81	0.30		11	COAL LOSS	
45	116.81	117.66	0.85			SILTSTONE	CLYY.DK.GY.SLD SOME COALY PTGS, OCC DISSEMINATED PYRITE, CARB PL CASTS, SLTY TOWARDS BASE.
* 45	117.66	117.91	0.25			SANDSTONE	FG.MOD.LT-M.GY.SLD CALCT VEIN AT TOP & BASE NORMAL TO BDG, MNR SLTST LAMS.
41	117.91	118.25	0.34			SANDSTONE	MG.LT.GY.WRMBU.SLD SLTST INTBDS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 35	118.25	118.90	0.65			SILTSTONE	M.GY.SLD SOME SLTST INTBDS, BECOMING V MUDDY TOW ARDS BASE, MNR CALCT VEINLETS.
35	118.90	119.43	0.53			MUDSTONE	SLTY.DK.GY.SLD MNR SS.
35	119.43	119.86	0.43			ROCK LOSS	
35	119.86	120.63	0.77			SILTSTONE	CLYY.M.GY.SLD OCC CARB PL CASTS.
34	120.63	122.39	1.76			SILTSTONE	SLD AS ABV.
34	122.39	122.51	0.12			SILTSTONE	CLYY NUMEROUS PL CASTS, SOME COALY PTGS, CAR B, SLTY MUDST TOWARDS BASE.
34	122.51	122.61	0.10			MUDSTONE	CARB.BRKN COAL PTGS.
34	122.61	122.90	0.29			MUDSTONE	CARB.SLD AS ABV.
34	122.90	123.14	0.24			MUDSTONE	CARB.SLD AS ABV.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	123.14	123.15	0.01			COAL	C-5.VBRKN PWRD.
34	123.15	123.45	0.30			MUDSTONE	CARB.SLD NUMEROUS BRIGHT COAL PTGS, POLISHED SUR F, CALCITE WAVY VEINLETS NEAR BASE.
34	123.45	123.46	0.01			COAL	C-1.VBRKN
34	123.46	123.59	0.13			MUDSTONE	CARB.SLD PL HASH, CALCT ALONG SHRD SURF, NUMEROU S COAL STRGS.
34	123.59	123.64	0.05			COAL	C-5.VBRKN MUDST INTERLAMS, HIGHLY SHRD.
34	123.64	123.67	0.03			COAL	C-4.PWRD B.C. MINES SAMPLE #C83-273.
34	123.67	124.22	0.55			MUDSTONE	DK.GY.SLD SLIGHTLY CARB & SLTY, SOME DISSEMINATED PYRITE IN UPPER HALF, MNR COAL PTGS, M NR CALCT.
33	124.22	124.31	0.09			MUDSTONE	SLD AS ABV.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	124.31	125.34	1.03			SANDSTONE	VFG.M.GY.SLD OCC SLTST & MUDST LNS, CALCT VEIN AT BA SE, COAL PTGS.
33	125.34	125.98	0.64			SANDSTONE	FG.LT.GY.SLD 2MM COAL PTGS AT TOP, MNR SLTST LAMS.
* 33	125.98	126.16	0.18			SANDSTONE	SLD AS ABV.
33	126.16	126.49	0.33			SANDSTONE	SLD AS ABV, MNR CLYST, SLTY MUDST LNS, SLIG HTLY CALC.
32	126.49	126.66	0.17			SILTSTONE	M.GY.SLD MNR SS & MUDST INTBDS.
32	126.66	126.97	0.31			SANDSTONE	FG.MOD.LT-M.GY.SLD SOME CALCT VEIN(3MM), SLTY TOWARDS BASE , SLIGHTLY CALC.
31	126.97	127.83	0.86			SILTSTONE	CLYY.M.GY.SLD SLIGHTLY CARB, MNR SS.
31	127.83	127.92	0.09			SILTSTONE	CLYY.M-DK.GY SLIGHTLY CARB, OCC COALY PTGS.

* DENOTES MEASURED BCA

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
30	127.92	128.09	0.17			MUDSTONE	SLTY.BLK.SLD COALY PTGS THROUGHOUT, COAL MORE FREQUE NT TOWARDS BASE.
30	128.09	128.27	0.18			MUDSTONE	SLTY.BLK.SLD COALY PTGS AND CARB PL HASH THROUGHOUT.
* 30	128.27	128.40	0.13			SILTSTONE	CLYY.M-DK.GY.SLD MNR CARB TO COALY PTGS AND PL FRAGS.
30	128.40	128.45	0.05			SANDSTONE	LT.GY.SLD MNR DK GY SLTY X-LAMS, ROOTLETS, CALCT VEINING NORMAL TO BDG.
31	128.45	129.04	0.59			MUDSTONE	SLTY.DK.GY.SLD MNR COAL PTGS AND CARB PL CASTS, FEATUR ELESS.
32	129.04	129.66	0.62			MUDSTONE	SLTY.DK.GY.SLD AS ABV.
33	129.66	129.76	0.10			SILTSTONE	CLYY.M-DK.GY.SLD AND CARB MUDST, MNR SKS AT BASE.
33	129.76	129.92	0.16			SANDSTONE	FG.MOD.M.GY.SLD CALC SS W DK GY MUDST AND THIN SLTST PT GS, HEAVILY CALCT VEINED AND FRAC, SOME DISCONTINUOUS MNR MOVEMENT, FEW WRMBUR

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	129.92	130.13	0.21			MUDSTONE	DK.GY.SLD GENERALLY FEATURELESS. OCC CARB PTG, SL TY AT TOP.
34	130.13	130.37	0.24			MUDSTONE	AS ABV.
* 35	130.37	131.04	0.67			SILTSTONE	CLYY.M-DK.GY.SLD INTBD MUDST DK GY.
35	131.04	131.29	0.25			ROCK LOSS	
35	131.29	131.30	0.01			COAL	C-1.BRKN
35	131.30	131.48	0.18			MUDSTONE	CARB.BLK.SLD COAL PTGS, MNR SKS.
35	131.48	131.72	0.24			MUDSTONE	BLK.VBRKN W COAL PTGS UP TO 5MM THICK. TUFFACEOUS SLTST ABOUT 2 CM WITHIN BRKN PIECES.
35	131.72	132.02	0.30			ROCK LOSS	
35	132.02	132.13	0.11			MUDSTONE	BLK.SLD AS ABV. COAL INCLUSIONS UP TO 1CM ACROS S.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
35	132.13	132.22	0.09			MUDSTONE	SLTY.M.GY.SLD CALCT VEIN TOP AND BOTTOM, POLISHED SUR F AT BASE.
36	132.22	132.55	0.33			SANDSTONE	FG.LT-M.GY.SSD M GY MUDST LAMS, LARGE BLEBS OF FG PYRI TE, F-MG SS AT BASE, CALCT VEIN DISRUPT ED INDICATING MOVEMENT, SKS AT BASE.
36	132.55	132.68	0.13			SILTSTONE	CLYY.M.GY.SLD OCC V THN COAL PTG.
36	132.68	132.88	0.20			MUDSTONE	BLK.SLD SLIGHTLY CARB, NUMEROUS V THN COAL STRG S, SKS, MNR CALCT VEINING.
36	132.88	132.94	0.06			MUDSTONE	DK.GY.VBRKN TUFFACEOUS MUDST, NUMEROUS CALCT FRAC.
36	132.94	133.42	0.48			MUDSTONE	BLK.BRKN SKS THROUGHOUT.
36	133.42	133.57	0.15			ROCK LOSS	
36	133.57	133.65	0.08			MUDSTONE	BLK.VBRKN SLIGHTLY CARB.
36	133.65	133.85	0.20			MUDSTONE	CARB.BLK.SLD SOME COAL STRGS, SKS THROUGHOUT.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	133.85	133.91	0.06			MUDSTONE	BLK.VBRKN COAL PTGS.
36	133.91	134.17	0.26			MUDSTONE	BLK.SLD MNR COAL PL CAST, SILTIER TOWARDS BASE.
36	134.17	134.75	0.58			SANDSTONE	FG.MOD.LT.GY.XBDG.BRKN CALC, WITH SLTST & DK GY MUDST INTBDS, SOME CALCT VEINING.
36	134.75	134.95	0.20			ROCK LOSS	
37	134.95	135.81	0.86			SANDSTONE	FG.MOD.LT-M.GY.SLD OCC XBDG AND SSD, MNR CALCT VEINING, CA LC.
37	135.81	136.52	0.71			MUDSTONE	SLTY.DK.GY.SLD MNR COAL STRGS, SLIGHTLY CARB AT TOP, S OME SLTST, SSD, SILTIER TOWARDS BASE,CA LCT STRGS AT TOP.
* 37	136.52	136.66	0.14			SILTSTONE	CLYY.M.GY.SLD

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
36	136.66	137.08	0.42			SANDSTONE	FG.LT-M.GY.SLD SLTST LAM, WAVY BDG, OCC XBDG, TOPS UP, MNR CALCT VEINING, FINING UPWARDS, SHA RP CTC W SLTST BASE.
36	137.08	137.26	0.18			SILTSTONE	CLYY.M.GY.SLD PREDOMINANTLY MORE SANDIER TOWARDS BASE .
36	137.26	137.31	0.05			SANDSTONE	LT.GY.SLD MNR MUDST RIP UP CLAST, SSD.
36	137.31	137.32	0.01			MUDSTONE	CARB SLIGHTLY TUFFACEOUS, POLISHED BASE.
35	137.32	137.39	0.07			COAL	C-4.VBRKN B.C.MINES SAMPLE # CB3-274.
35	137.39	137.41	0.02			COAL	C-4.VBRKN CONTAINS SOME C-6 BANDS.
35	137.41	137.61	0.20			ROCK LOSS	
34	137.61	138.00	0.39			MUDSTONE	SLTY.M.GY.SLD
34	138.00	138.11	0.11			MUDSTONE	SLTY.M.GY.BRKN AS ABV.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
33	138.11	139.22	1.11			MUDSTONE	SLTY.M.GY.SLD SLTY MUDST INTBDS IN BOTTOM 1/3.
31	139.22	139.42	0.20			SILTSTONE	M.GY.SLD SLIGHTLY ARG, ONE CALCT VEIN.
31	139.42	139.78	0.36			SILTSTONE	LT-M.GY.SSD.SLD SLIGHTLY ARG, W FG SS INTBDS, MNR CALCT VEINING AND QTZ CRYSTALS, MNR SKS, PYRITE BLEB AT BASE.
* 30	139.78	140.20	0.42			SANDSTONE	FG.LT.GY.SSD.SLD W SLTST LAM, MNR COAL PTGS AND SOME CALCT, SHARP CTC AT BASE.
31	140.20	140.43	0.23			MUDSTONE	BLK.SLD FEATURELESS, POLISHED BASE.
31	140.43	140.53	0.10			ROCK LOSS	
32	140.53	140.92	0.39			MUDSTONE	SLTY.DK.GY.BRKN OCC COALY TO CARB PL CASTS, SILTIER TOWARDS BASE.
* 33	140.92	141.29	0.37			SILTSTONE	CLYY.DK.GY SLIGHTLY SANDIER AT BASE.
32	141.29	141.40	0.11			SILTSTONE	CLYY.DK.GY.SLD MNR SS LNS, MNR COAL INCLUSIONS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
31	141.40	142.34	0.94			SILTSTONE	CLYY.DK.GY.SLD OCC SS FLOW STRUCTURES INDICATING SSD, PYRITE BLEBS ASSOCIATED W OCC COALY/CAR B PL CASTS.
28	142.34	143.04	0.70			MUDSTONE	SLTY.DK.GY.SLD PL CASTS, GENERALLY FEATURELESS, POLISH ED SURF AT BASE.
27	143.04	143.16	0.12			MUDSTONE	CARB.BLK.VBRKN NUMEROUS COAL STRGS, SKS.
27	143.16	143.28	0.12			SILTSTONE	CLYY.DK.GY.SLD MNR COAL PTGS.
26	143.28	144.01	0.73			SILTSTONE	CLYY.M.GY.SSD.SLD SOME SILT & SS POCKETS SHOWING SSD.
24	144.01	144.20	0.19			SILTSTONE	CLYY.M.GY.BRKN
24	144.20	144.35	0.15			ROCK LOSS	
23	144.35	144.81	0.46			SILTSTONE	CLYY.M.GY.SLD OCC COAL PTG, FEATURELESS.
21	144.81	145.47	0.66			SILTSTONE	CLYY.M.GY.SLD AS ABV W GREATER AMTS OF SSD WHERE SAND DEPOSITED.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
20	145.47	145.50	0.03			SILTSTONE	CLYY.M.GY.SLD CALC.
19	145.50	146.37	0.87			SILTSTONE	CLYY.M.GY.SLD AS ABV.
18	146.37	146.42	0.05			ROCK LOSS	
16	146.42	147.19	0.77			SILTSTONE	CLYY.M.GY.WRMBU.SLD CALC, SOME SLTY -FG LT GY SAND LAM, MNR SSD,THN CALCT VEIN ALONG B/P.
* 15	147.19	147.40	0.21			SANDSTONE	FG.MOD.LT.GY.SLD CALCT VUGS, SS CALC, DK GY SLTST LAM, W AVY TO LENTICULAR BDG.
14	147.40	147.51	0.11			SANDSTONE	FG.MOD.LT.GY.SLD AS ABV, CALCT XSTALS AT BASE, FEW CALCT VUGS, MNR XBDG INDICATES TOPS UP.
* 10	147.51	148.36	0.85			SANDSTONE	FG.MOD.LT-M.GY.SLD AS ABV W INTBDS OF DK GY MUDST, MIDWAY WAVY BDG, SOME SSD AT BD CTCS SHARP(REACT SURF) CTC AT BASE.
10	148.36	149.60	1.24			MUDSTONE	DK.GY.SLD SLIGHTLY SLTY, FEATURELESS.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
10	149.60	150.39	0.79			MUDSTONE	DK.GY.SLD AS ABV, M.BN MUD CLAST, FEW BRKN PIECES AT BASE.
10	150.39	150.49	0.10			ROCK LOSS	
10	150.49	151.86	1.37			MUDSTONE	DK.GY.SLD AS ABV, OCC COALY PTG.
10	151.86	152.59	0.73			MUDSTONE	DK.GY.SLD MNR CALCT PTGS, SLIGHTLY SILTY AT TOP B ECOMING MUDDIER TOWARDS BASE, FEATURELE SS.
10	152.59	153.05	0.46			MUDSTONE	DK.GY.BRKN AS ABV BUT NUMEROUS SKS & BLK POLISHED SURF, THN CALCT PTGS, CARB TOWARDS BASE
10	153.05	153.46	0.41			MUDSTONE	CARB.BLK.VBRKN SAND POCKETS, CALCT INFILLED FRAC, SKS & BRECCIATED SSD MUDST/SS.
10	153.46	153.56	0.10			ROCK LOSS	
10	153.56	153.65	0.09			MUDSTONE	CARB.BLK.SLD SKS, SILTY AT BASE.

* DENOTES MEASURED BCA

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 10	153.65	154.01	0.36			SANDSTONE	FG.MOD.LT.GY.SLD SLIGHTLY CALC, MNR SLTST LAM, CALCT VEI NLETS.
* 10	154.01	155.02	1.01			SANDSTONE	FG.MOD.LT.GY.SLD AS ABV, CALC, HEAVILY CALCT VEINED, SSD , BRECCIATED INTERVALS, MNR PYRITE ALON G SKS PLANE.
* 10	155.02	155.14	0.12			MUDSTONE	CARB.BLK.VBRKN NUMEROUS COAL PTGS, POLISHED SURF.
* 45	155.14	155.78	0.64			SANDSTONE	FG.MOD.LT-M.GY.SSD.BRKN CALC, HEAVILY CALCT VEINED, BRECCIATED NEAR TOP, SSD THROUGHOUT WITH DK SLTST LAM.
44	155.78	155.80	0.02			MUDSTONE	CARB.VBRKN AND COALY PTGS.
44	155.80	155.90	0.10			ROCK LOSS	
44	155.90	156.02	0.12			SANDSTONE	FG.MOD.M.GY CALCT VEINS, CALC, PYRITE BLEBS.
44	156.02	156.15	0.13			MUDSTONE	SLTY.DK.GY.SLD MNR CALCT VEINS.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
43	156.15	156.61	0.46			MUDSTONE	DK.GY.SLD AS ABV, SOME SKS, SOME SS SSD IN LOWER SECTION, MNR COAL INCLUSION.
42	156.61	157.90	1.29			MUDSTONE	DK.GY.SLD AS ABV.
41	157.90	158.25	0.35			MUDSTONE	CARB.BLK.BRKN COAL PTGS, POLISHED SURF, PIECES OF COA L C-1.
40	158.25	158.27	0.02			MUDSTONE	CARB.BLK SKS, PYRITE LNS.
40	158.27	158.72	0.45			MUDSTONE	DK.GY BECOMING SILTY TOWARDS BASE.
39	158.72	159.25	0.53			SILTSTONE	CLYY SS LNS, MNR SSD, PYRITE BLEBS, COAL PTG S.
39	159.25	159.36	0.11			SILTSTONE	CARB.DK.GY.SLD THIN CALCT VEINS TOP & BOTTOM, COAL PTG S.
38	159.36	159.53	0.17			SILTSTONE	CLYY.M.GY.BRKN

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
38	159.53	159.63	0.10			ROCK LOSS	
38	159.63	160.04	0.41			MUDSTONE	SLTY.DK.GY
* 37	160.04	160.36	0.32			MUDSTONE	SLTY.DK.GY.SLD AS ABV W SS INTBDS AND SLTST LAM, FEW R IP UP CLASTS, V MNR CALCT VEINING.
35	160.36	160.46	0.10			SILTSTONE	M.GY.SLD
31	160.46	161.31	0.85			SANDSTONE	LT.GY.SSD SLIGHTLY CALC, CALCT VUGS & MNR VEINLETS INDICATING SOME SLIPPAGE, SLTST LAM NEAR BASE.
* 23	161.31	162.16	0.85			SILTSTONE	CLYY.M.GY.SLD W DK GY MUDST INTBDS, PYRITE MID WAY.
29	162.16	162.36	0.20			SILTSTONE	CLYY.M.GY.SSD.SLD AS ABV BUT BDG INDISTINCT, SOME FG SST.
31	162.36	162.57	0.21			ROCK LOSS	

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 33	162.57	162.74	0.17			SANDSTONE	FG.LT-M.GY.SLD W SLTST LAM, FEW SMALL WRMBUR.
33	162.74	163.04	0.30			SILTSTONE	M.GY.SLD . W FG SS LAM.
34	163.04	163.24	0.20			MUDSTONE	SLTY.M.GY.SLD
34	163.24	163.48	0.24			SILTSTONE	CLYY.M.GY.SLD
34	163.48	163.55	0.07			SANDSTONE	FG.MOD.LT.GY.SLD FEW SLTST LNS.
* 35	163.55	164.59	1.04			SILTSTONE	M.GY.SLD W MUDST & SOME FG SS INTBDS, OCC SKS.
* 34	164.59	164.99	0.40			SILTSTONE	CLYY.M.GY.SLD FG SS LAM, SSY TOWARDS BASE, MNR CALCT VEINING INDICATING BD SLIPPAGE.
34	164.99	165.64	0.65			MUDSTONE	SLTY.M.GY.BRKN
34	165.64	165.71	0.07			SANDSTONE	FG.MOD.LT.GY.SLD MUDST INTBDS.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
34	165.71	165.72	0.01			MUDSTONE	CARB COALY & CARB, CALCT VEINING, SKS.
34	165.72	165.89	0.17			MUDSTONE	M.GY.BRKN SKS, SMALLER BRKN PIECES AT BASE.
33	165.89	166.35	0.46			SANDSTONE	VFG.MOD.LT.GY.SSD.BRKN NUMEROUS CALCT HEALED FRAC, SOME BRECCI ATION, SLTST WISPS AND LNS, COAL PTGS, SKS.
33	166.35	166.41	0.06			MUDSTONE	DK.GY.SLD
33	166.41	167.01	0.60			MUDSTONE	DK.GY.BRKN SLIGHTLY CARB AT TOP, VBRKN AT BASE.
33	167.01	167.06	0.05			SILTSTONE	CLYY.DK.GY.SLD HEAVILY CALCT HEALED FRAC.
* 33	167.06	167.29	0.23			SILTSTONE	CLYY.DK.GY.SLD W MUDST INTBDS, CALC, MNR XBDG, TOPS UP
32	167.29	167.94	0.65			SILTSTONE	CLYY.DK.GY.SLD MUDDIER AT BASE, FEATURELESS.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
32	167.94	168.07	0.13			MUDSTONE	CARB.BLK.VBRKN SKS.
32	168.07	168.17	0.10			MUDSTONE	CARB.BLK.VBRKN
32	168.17	168.19	0.02			MUDSTONE	CARB.BLK.VBRKN
30	168.19	170.09	1.90			MUDSTONE	SLTY.DK.GY.SLD FEATURELESS.
28	170.09	171.23	1.14			MUDSTONE	DK.GY.BRKN AS ABV, SMALL BIVALVE IMPRESSIONS.
27	171.23	171.92	0.69			MUDSTONE	DK.GY.SLD MNR SLT LNS.
26	171.92	172.46	0.54			MUDSTONE	SLTY.DK.GY.SLD AS ABV.
25	172.46	172.78	0.32			SILTSTONE	M.GY.SLD LAM, SML SLUMP FEATURES INDICATING TOPS UP.
25	172.78	172.98	0.20			MUDSTONE	SLTY.M.GY.SLD MNR MUDST, COALY-CARB LAM.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
24	172.98	173.58	0.60			SILTSTONE	CLYY.LT-M.GY.SLD INTBD MUDST, COALY-CARB LAM AND INCLUSIONS, MNR SSD.
23	173.58	173.85	0.27			SANDSTONE	FG.MOD.LT.GY.SLD THIN LNS OF CARB MUDST, MNR CALCT VUGS & VEINS.
23	173.85	174.18	0.33			SANDSTONE	FG.MOD.LT.GY.BRKN CALCT VUGS.
22	174.18	174.58	0.40			ROCK LOSS	
* 22	174.58	174.85	0.27			SANDSTONE	FG.MOD.LT.GY.SLD AS ABV, SLTST LAM INCREASING TOWARDS BASE.
23	174.85	176.30	1.45			MUDSTONE	DK.GY.SLD
24	176.30	176.92	0.62			MUDSTONE	DK.GY.SLD AS ABV, FEATURELESS.
24	176.92	177.22	0.30			MUDSTONE	BLK.SLD SLIGHTLY CARB, MNR SKS NEAR TOP.
24	177.22	177.59	0.37			MUDSTONE	DK.GY FAINT BANDED APPEARANCE DUE TO COLOR.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 25	177.59	178.30	0.71			MUDSTONE	DK.GY.SLD AS ABV, SLIGHTLY CARB AT BASE, TRACE OF V THIN COAL STRGS (FEW BRKN PIECES AT BOTTOM), MNR SKS.
25	178.30	178.97	0.67			SANDSTONE	FG.MOD.M.GY.SSD.SLD DISSEMINATED PYRITE THROUGHOUT, CARB TO COALY PTGS, SOME PL CASTS, CALCT HEALED FRAC, BD CUTOFF SUGGESTS MOVEMENT, TH IN COAL C-5 AT TOP.
25	178.97	179.70	0.73			ROCK LOSS	
25	179.70	179.72	0.02			COAL	C-2.BRKN
25	179.72	179.80	0.08			MUDSTONE	CARB.BLK.BRKN COAL C-1 PTGS.
25	179.80	179.90	0.10			MUDSTONE	CARB.BLK.BRKN COAL C-1 LNS, SOME POLISHED SURF.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	179.90	180.00	0.10			MUDSTONE	CARB.BLK.BRKN AS ABV.
25	180.00	180.10	0.10			ROCK LOSS	
25	180.10	180.19	0.09			MUDSTONE	CARB.BLK.BRKN AS ABV.
25	180.19	180.33	0.14			MUDSTONE	CARB.BLK.SLD AS ABV BUT INCREASING AMTS OF COAL PTGS & STRGS.
25	180.33	180.44	0.11			ROCK LOSS	
25	180.44	180.50	0.06			MUDSTONE	CARB.BLK.BRKN W COAL PTGS.
25	180.50	180.90	0.40			MUDSTONE	CARB.BLK.BRKN W COAL PTGS, POLISHED SURF.
25	180.90	180.96	0.06		12	COAL	C-5.SLD INTBD CARB MUDST, SOME C-1 BANDS.
25	180.96	181.06	0.10		12	COAL	C-5 AS ABV, MORE CARB AT BASE, B.C. MINES SAMPLE # C83-275.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	181.06	181.40	0.34		12	COAL LOSS	
25	181.40	181.46	0.06			MUDSTONE	CARB.BLK.VBRKN
25	181.46	181.66	0.20			ROCK LOSS	
25	181.66	181.94	0.28			MUDSTONE	DK.GY.BRKN SLIGHTLY CARB & SOME COAL STRGS AT TOP, OCC COAL PTGS THROUGHOUT.
25	181.94	182.35	0.41			SANDSTONE	FG.MOD.M.GY.SSD.SLD DISSEMINATED PYRITE, WRMBUR.
25	182.35	183.11	0.76			MUDSTONE	SLTY.DK.GY.SLD SLIGHTLY CARB, MNR COAL STRGS & PL FRAG S, SOME SKS, SOME SST SSD.
25	183.11	183.21	0.10			MUDSTONE	DK.GY.SLD W COAL PTGS UP TO 5MM, MNR CALCT.
25	183.21	183.63	0.42			MUDSTONE	SLTY.M.GY.SLD SLTST SSD, WAVY LAM.
25	183.63	183.77	0.14			SANDSTONE	FG.LT.GY.SSD.SLD

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR · BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
25	183.77	184.57	0.80			SANDSTONE	FG.MOD.LT-M.GY.SSD.SLD W SLTST INTBDS, CALC, CALCT VUGS, OIL S T & FE STN.
25	184.57	184.97	0.40			SILTSTONE	LT-M.GY.SSD.SLD MNR CALCT VEINING AND OCC COALY PTG.
25	184.97	185.72	0.75			MUDSTONE	SLTY.M.GY.SLD SLIGHTLY CARB IN PLACES, OCC COALY STRG S, SOME DISRUPTED CALCT VEINING INDICAT ING MOVEMENT, SSD IN SOME INTERVALS.
25	185.72	185.82	0.10			SILTSTONE	CLYY.M.GY.SLD LAM W MUDST INTBDS.
25	185.82	186.79	0.97			SILTSTONE	CLYY.M.GY.SLD W MUDST INTBDS, SOME LT GY VFG SS ASSOC IATED W SSD, COAL STRGS & PL FRAGS, CAL CT BAND AT BASE.
25	186.79	187.09	0.30			ROCK LOSS	
25	187.09	188.05	0.96			SILTSTONE	CLYY.M.GY.SLD AS ABV.
25	188.05	190.30	2.25			CORE LOSS	BOX MISSING- BOTTOM OF BOX 84 AND TOP O F BOX 86 PIECES DON'T MATCH

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: DDH83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
* 25	190.30	192.36	2.06			SILTSTONE	CLYY.M.GY.SLD AS ABV. SOME LT SLTST BANDS NEAR BASE. 1 CM COAL SPLIT AT 90CM FROM TOP. END O F HOLE.
25	192.36	194.18	1.82			CORE LOSS	GEOLOG INDICATES THAT TRUE DEPTH OF HOL E IS 196.0 M, THEREFORE, MISSING TWO BO XES-87 & 88.
25	194.18	196.00	1.82			CORE LOSS	SEE NOTE FOR BOX 87. APPARENT END OF HO LE.

SAMPLE SUMMARIES

GULF CANADA RESOURCES INC. - COAL DIVISION

28/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

APPARENT THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83003										
	9	2182	38.75	43.60	52.57	2.55	0.00	2.30	0.00	4.85- 0.00
		2183	103.70	103.84	100.00	0.00	0.14	0.00	0.00	0.00- 0.14
	8	2184	103.84	105.56	31.97	0.55	0.00	1.17	0.00	1.72- 0.00

COAL SEAM DATA SHEETS

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc _____ RESISTIVITY _____

DRILL NO. GDR-MB-DDH-83003 SEAM: 10 SEAM INTERVAL 103.84 m - 105.56 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 1.07m / 1.07m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP. 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	X REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FSI
	103.02		0.28											
	103.40		(0.10)											
	103.48		(0.20)	0.08										
			0.01 Tuff											
	103.84		0.14	0.01	100.0	2183								
				(0.75)										
	104.59													
				0.41	32.0	2184	08	0.59	19.11	19.48	60.82	0.52	28.99	6.5
	104.90													
				(0.42)										
	105.42													
	105.56			0.14										
			0.39											
	105.95													

[205,57]831007002.DAT

COAL SEAM DATA SHEET

GULF CANADA RESOURCES INC.
COAL DIVISION

APPARENT DENSITY GRAMS/cc ---------- RESISTIVITY ----------

DRILL NO. GDR-MB-DDH-83003 SEAM 9 SEAM INTERVAL 38.75 m - 43.60 m
SCALE 1:60 FORMATION GETHING COAL/COAL + ROCK (TRUE THK.) 1.98m / 1.98m

DENSITY SCALE
1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40 2.60 2.80

RESISTIVITY SCALE KOHM m
6 5 4 3 2 1 0

GEOPHYSICAL LOGS

SEAM COMP. 1 2 3 4 5 6	DEPTH (m)	COAL SEAM LOG	APPARENT THICKNESS (m) ROCK	APPARENT THICKNESS (m) COAL	% REC.	SAMPLE NO. SIMPLE	SAMPLE NO. COMPOS.	PROXIMATE ANALYSIS RES. MOIST	ASH	VM	FC	S'	MJ/KG	FSI
	38.11			0.03										
	38.14		0.39											
	40.09		(0.22)											
	38.75													
				(1.34)										
	40.09													
				1.58	52.6	2182	07	0.96	7.46	21.33	70.25	0.49	32.47	3.0
	41.69			0.02										
				(0.96)										
	42.65													
				0.95										
	43.60													
	43.66		0.06											
			(0.50)											
	44.16													

1203,5718310070Q2.DAT

GDR 83-03 1 OF 2

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH83003										
	9	2182	38.75	43.60	52.58	1.023		0.958		1.98- 0.00
		2183	103.70	103.84	100.00		0.088			0.00- 0.09
	10	2184	103.84	105.56	31.98	0.340		0.725		1.06- 0.00

GDR-MB-DDH-83001
GDR-MB-DDH-83003
GDR-MB-DDH-83002
MOBERLY LAKE
WEST MOBERLY LAKE
MOBERLY RIVER
MOBERLY Creek
TP.78, R.26
TP.78, R.25
TP.77, R.26
TP.77, R.25
TP.76, R.26
TP.76, R.25
Unsurveyed boundary of former Peace River Block
MOUNT FRANKROX
MOUNT HULCROSS
MOUNT BICKFORD
PYRAMID PEAK
FALLS MTN
MOUNT DAVIS
MOUNT HUNTER
MOUNT MURDOCK
ROCKY MOUNTAIN FOOTHILLS
HART RANGES
ROCKY MOUNTAINS
ROCKY MOUNTAIN TRENCH
ADT 8201
Scale 0 1 2 3 4 5 km

534 Appendix B
FR-GOODRICH 83(2)A (3*)

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
DRILL HOLE LOCATIONS

SCALE 1:50,000
PREPARED BY:
APPROVED BY: V. L. D. DATE: NOV. 83
G-83DL01
DRAWING No. GDR-83-294

CONFIDENTIAL

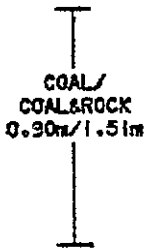
GOODRICH COAL PROPERTY

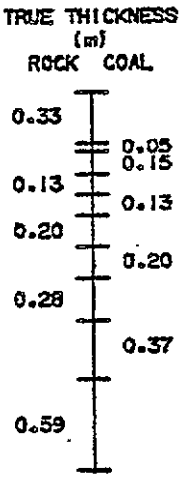
GEOLOGICAL REPORT

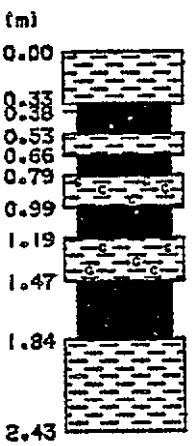
1983

APPENDIX C

TRENCH DATA







ROOF: 323°/54°NE

MUDSTONE
COAL C-5
COAL C-3
MUDSTONE
COAL C-5
MUDSTONE
COAL C-3
MUDSTONE
COAL C-3
MUDSTONE

FLOOR: 323°/54°NE

FORMATION	:	GETHING
UTM COORDINATES	:	6184140mN, 536770mE
MAP CARD NUMBER	:	930/16WD-11
AIR PHOTO NUMBER	:	HA 80780-238
TRENCH DEPTH	:	0.4m
TRENCH WIDTH	:	0.7m
TRENCH LENGTH	:	2.43m
TRENCH BEARING	:	222°
TRENCH SLOPE	:	25°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83001

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: R. INKSTER	DATE: 22/08/83
APPROVED BY: V. DUFORD	

GDR[205,5718300]GDR-MB-TRC-83001.LOG

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.33	0.33			MUDSTONE	M-DK.BN CONCRETIONS, FLAGGY. ROOF.
	0.33	0.38	0.05			COAL	C-5 SOFT, PWRD.
	0.38	0.53	0.15			COAL	C-3 HARD, SHRD.
	0.53	0.66	0.13			MUDSTONE	DK.BN SML CARB PL FRAGS, RUBBLY.
	0.66	0.79	0.13			COAL	C-5 SOFT, PWRD.
	0.79	0.99	0.20			MUDSTONE	DK.BN COALIFIED, HARD, MNR COALY INCLUSIONS.
	0.99	1.19	0.20			COAL	C-3 HARD.
	1.19	1.47	0.28			MUDSTONE	DK.BN COALIFIED PL FRAGS, FE STN, RUBBLY.
	1.47	1.84	0.37			COAL	C-3 BRIGHT IS THICK & HARD, DULL IS SOFT & THIN.

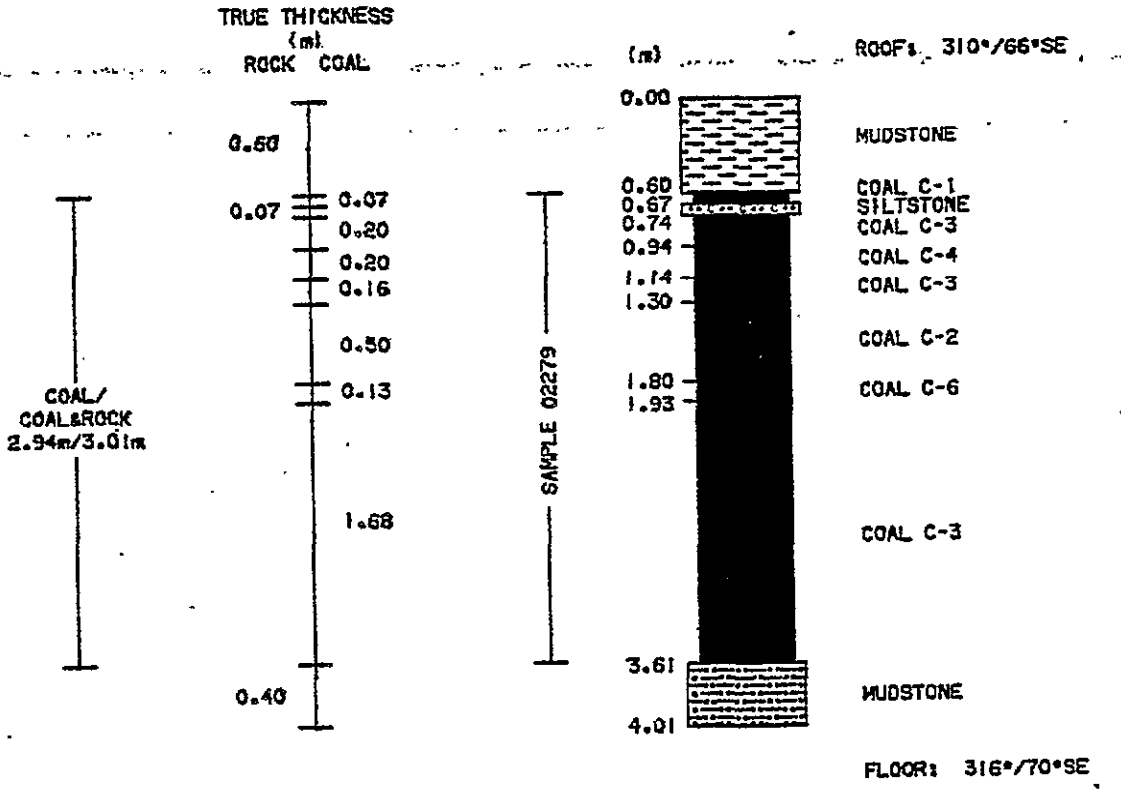
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.84	2.43	0.59			MUDSTONE	DK.BN THIN COALY LAM, ABNT PL CASTS & CARB PL FRAGS, HEAVILY FE STN. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6184070mN, 537280mE
MAP CARD NUMBER	:	930/16WD-11
AIR PHOTO NUMBER	:	HA 80780-238
TRENCH DEPTH	:	0.8m
TRENCH WIDTH	:	1.5m
TRENCH LENGTH	:	4.01m
TRENCH BEARING	:	234°
TRENCH SLOPE	:	26°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83002

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: R. INKSTER	DATE: 22/06/83
APPROVED BY: V. DUFORD	

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.60	0.60			MUDSTONE	DK.GY WTHRD BN, CARB PL FRAGS, RUBBLY. ROOF.
	0.60	0.67	0.07	02279		COAL	C-1 SHRD, SEMI HARD.
	0.67	0.74	0.07	02279		SILTSTONE	CARB.DK.BN LENTICULAR, FE STN.
	0.74	0.94	0.20	02279		COAL	C-3 V SHRD, HARD.
	0.94	1.14	0.20	02279		COAL	C-4 SHRD, HARD.
	1.14	1.30	0.16	02279		COAL	C-3 V SHRD, SEMI HARD.
	1.30	1.80	0.50	02279		COAL	C-2 BLKY, HARD.
	1.80	1.93	0.13	02279		COAL	C-6 HARD, FE STN.
	1.93	3.61	1.68	02279		COAL	C-3 V HARD, V SHRD.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.61	4.01	0.40			MUDSTONE	SLTY.DK.GY.LAM WTHRD DK BN, THNBD, MNR CARB PL FRAG, F E STN. FLOOR.

* DENOTES MEASURED BCA

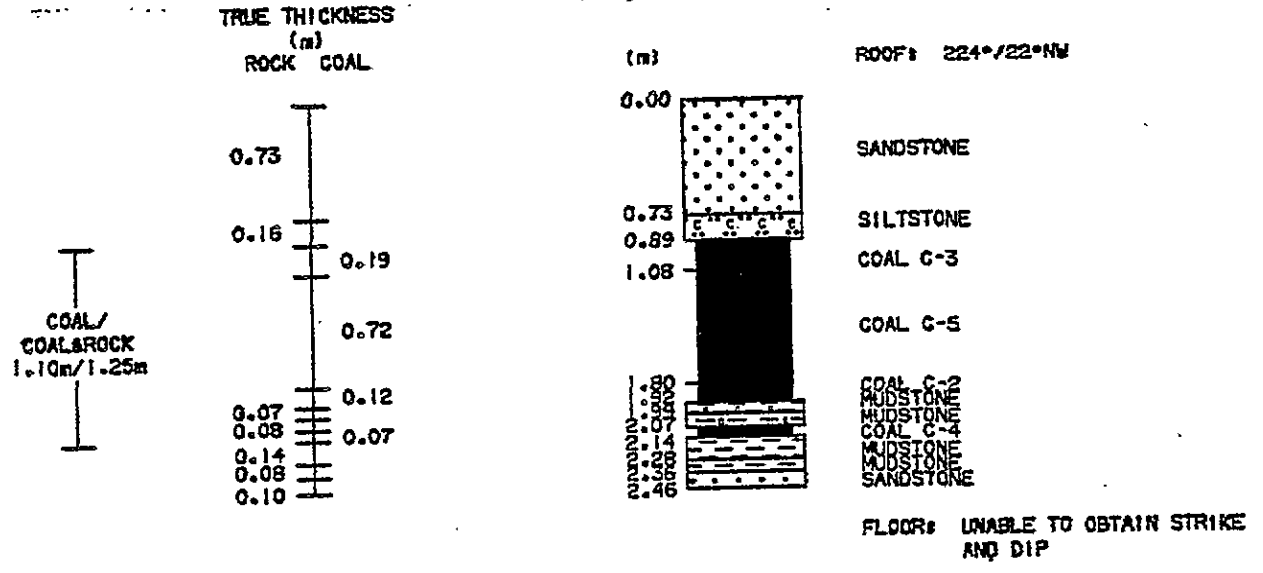
GULF CANADA RESOURCES INC. - COAL DIVISION

29/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

TRUE THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC83002		2279	0.60	3.61	100.00	2.940	0.070			2.94- 0.07



FORMATION	:	BRENOT (?)
UTM COORDINATES	:	6167450mN, 543750mE
MAP CARD NUMBER	:	930/9WF-8
AIR PHOTO NUMBER	:	BC7191-026
TRENCH DEPTH	:	0.8m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	2.46m
TRENCH BEARING	:	314°
TRENCH SLOPE	:	NOT OBTAINED

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83003

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: B. CARPENTER	DATE: 26/06/83
APPROVED BY: V. DUFORD	

G90:(205,5718300)86001.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.73	0.73			SANDSTONE	FG-.M-DK.GY.MAS.XBDG LITHIC, OCC RUSTY SPECKS, HARD. ROOF.
	0.73	0.89	0.16			SILTSTONE	CARB.DK.GY.MAS CARB PL DEBRIS, CONCHOIDAL IRREGULAR FR AC, HARD. ROOF.
	0.89	1.08	0.19			COAL	C-3 HIGHLY WTHRD, SOFT, MNR RUSTING ALONG F RAC.
	1.08	1.80	0.72			COAL	C-5 BROWNISH LUSTER, REGULAR CLEAVAGE, HARD & SOFT BANDED.
	1.80	1.92	0.12			COAL	C-2 VERY SOFT & FLAKEY.
	1.92	1.99	0.07			MUDSTONE	CARB.LAM V SOFT, THINLY LAM TO FLAKEY, V SOFT.
	1.99	2.07	0.08			MUDSTONE	CARB.DK.BN HARD.
	2.07	2.14	0.07			COAL	C-4 SOFT, FLAKEY.
	2.14	2.28	0.14			MUDSTONE	DK.GY.LAM SOFT, FLAKEY, HIGHLY LAM.

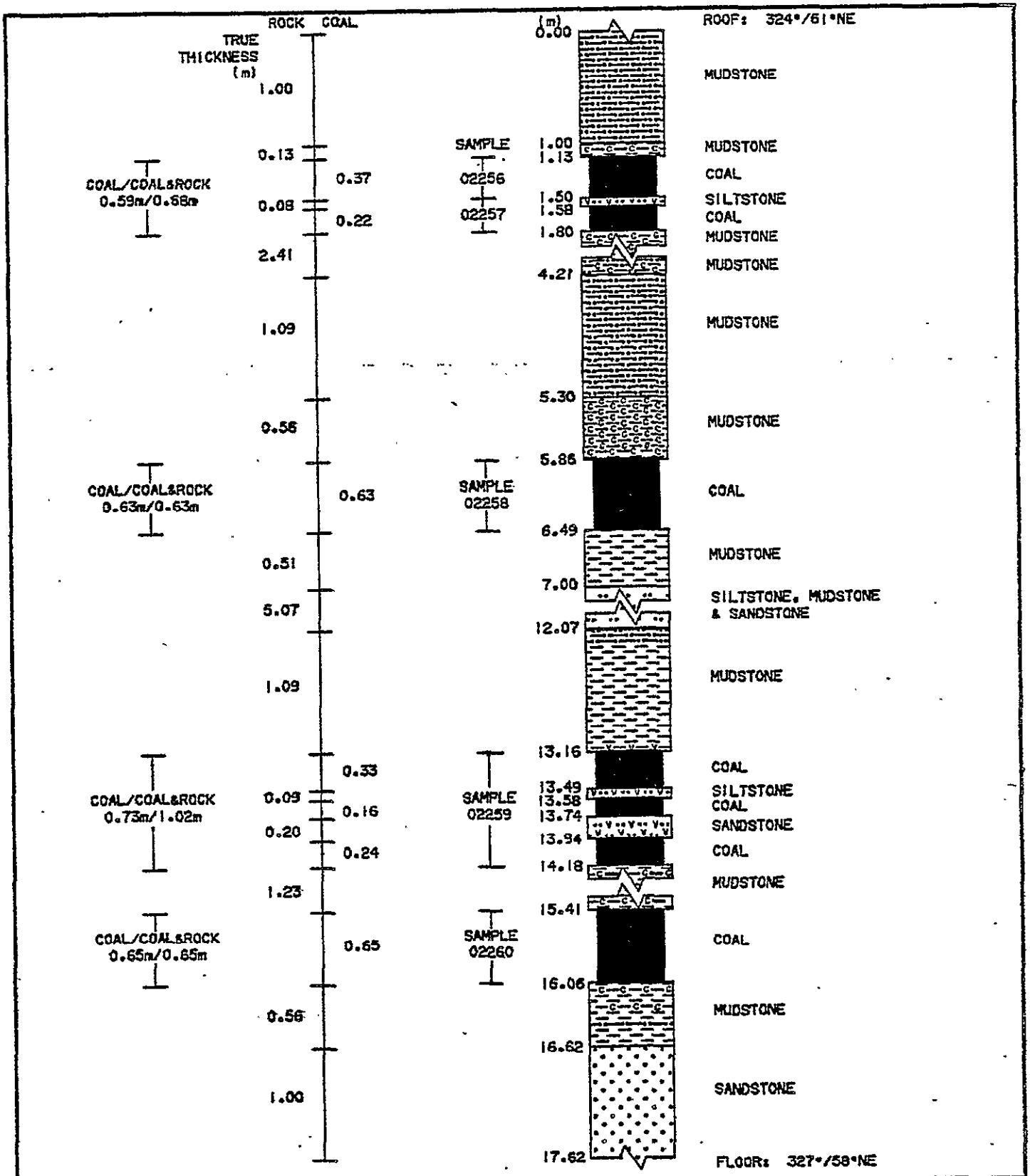
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.28	2.36	0.08			MUDSTONE	M.BN BUFF-BN, MODERATELY SOFT, RUST BANDING THROUGHOUT.
	2.36	2.46	0.10			SANDSTONE	SLTY.FG.VWEL.LT.GY.MAS WTHRD REDDISH BN, HARD, JOINTS NORMAL TO BDG, TOPS UP. FLOOR.

* DENOTES MEASURED BCA



FORMATION : GETHING
UTM COORDINATES : 6162470mN, 540490mE
MAP CARD NUMBER : N/A
AIR PHOTO NUMBER: N/A
TRENCH DEPTH : 1.5m
TRENCH WIDTH : 1.0m
TRENCH LENGTH : 17.62m
TRENCH BEARING : 215°
TRENCH SLOPE : 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83004

DRAWN BY: E. SWANBERGSON	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 30/05/83
APPROVED BY: V. DUFORD	

GDR:(205.571830960001.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.00	1.00			MUDSTONE	SLTY.DK.GY.LAM WTHRS RUSTY BN, MNR RUST WTHRING, PL FR AGS, BASAL CTC UNDULATES, RARE CARB LAM . ROOF.
	1.00	1.13	0.13			MUDSTONE	CARB.BLK.VTHNB ABNT COAL STRGS.
	1.13	1.50	0.37	02256		COAL	SHRD CRUMBLY, WET.
	1.50	1.58	0.08	02257		SILTSTONE	M.GY TUFFACEOUS, COALY FLECKS.
	1.58	1.80	0.22	02257		COAL	C-2.SHRD WET, BRIGHT BANDED.
	1.80	4.21	2.41			MUDSTONE	CARB BRIGHT COAL STRGS UP TO 4CM THICK, SOME FE STN.
	4.21	5.30	1.09			MUDSTONE	SLTY.BN GY-BN, RUSTY WTHRING (ABSENT AT BASE), MNR FE CONC BDS, BLKY TO RUBBLY, MNR CA RB BLEBS, 324/67E BDG ATTITUDE.
	5.30	5.86	0.56			MUDSTONE	CARB WET, CRUMBLY.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	5.86	6.49	0.63	02258		COAL	C-4.PWRD DULL W BRIGHT BANDS (?), CRUMBLY TO PWR DY.
	6.49	7.00	0.51			MUDSTONE	DK.GY MNR FE STN, BRIGHT COAL STRGS.
	7.00	7.63	0.63			SILTSTONE	SSY.BN.LAM CARB PL DEBRIS AND LAM.
	7.63	7.91	0.28			MUDSTONE	BN GY & BN INTBDS, MNR COAL STRGS.
	7.91	8.34	0.43			MUDSTONE	SLTY.M.BN SLIGHT RUST WTHRING.
	8.34	9.36	1.02			SANDSTONE	VFG.M-DK.GY MUDST & SLTST LNS & LAM, POSSIBLE RIP U P CLASTS, MORE SILTY IN BASAL HALF, PL STEMS & LEAF IMPRINTS.
	9.36	10.63	1.27			MUDSTONE	BN.THNB DK GY & DK BN CARB INTBDS, WTHRS SLIGHT LY RUSTY, COALY STRGS <0.5CM, THIN FE S T BDS (2CM) APPEAR IN BASAL 1/4.
	10.63	12.07	1.44			SILTSTONE	M.GY.LAM.SSD BN-GY, SLIGHTLY SSY, RUST WTHRING, BLKY TO RUBBLY.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	12.07	13.16	1.09			MUDSTONE	M-DK.GY SLTY AT TOP. FE ST CONC BDS UP TO 3CM THICK, RUBBLY TO CRUMBLY, CARB IN BASAL 20CM, 2CM TUFFACEOUS BAND AT BASAL CTC.
	13.16	13.49	0.33	02259		COAL	PWRD MNR CARB MUDST INTBDS.
	13.49	13.58	0.09	02259		SILTSTONE	TUFFACEOUS, POSSIBLY TUFF.
	13.58	13.74	0.16	02259		COAL	PWRD WET, 2CM CARB MUDST AT BASE.
	13.74	13.94	0.20	02259		SANDSTONE	VFG.VTHNB VTHNB CARB MUDST INTBDS, COALY WISPS AT BASE, 1 CM CARB MUDST IN MIDDLE. TUFFACEOUS.
	13.94	14.18	0.24	02259		COAL	C-2.PWRD BRIGHT BANDED, WET, CRUMBLY.
	14.18	15.41	1.23			MUDSTONE	CARB.DK.GY.THNB.PWRD COAL STRGS THROUGHOUT.
	15.41	16.06	0.65	02260		COAL	WET, CRUMBLY.

* DENOTES MEASURED BCA

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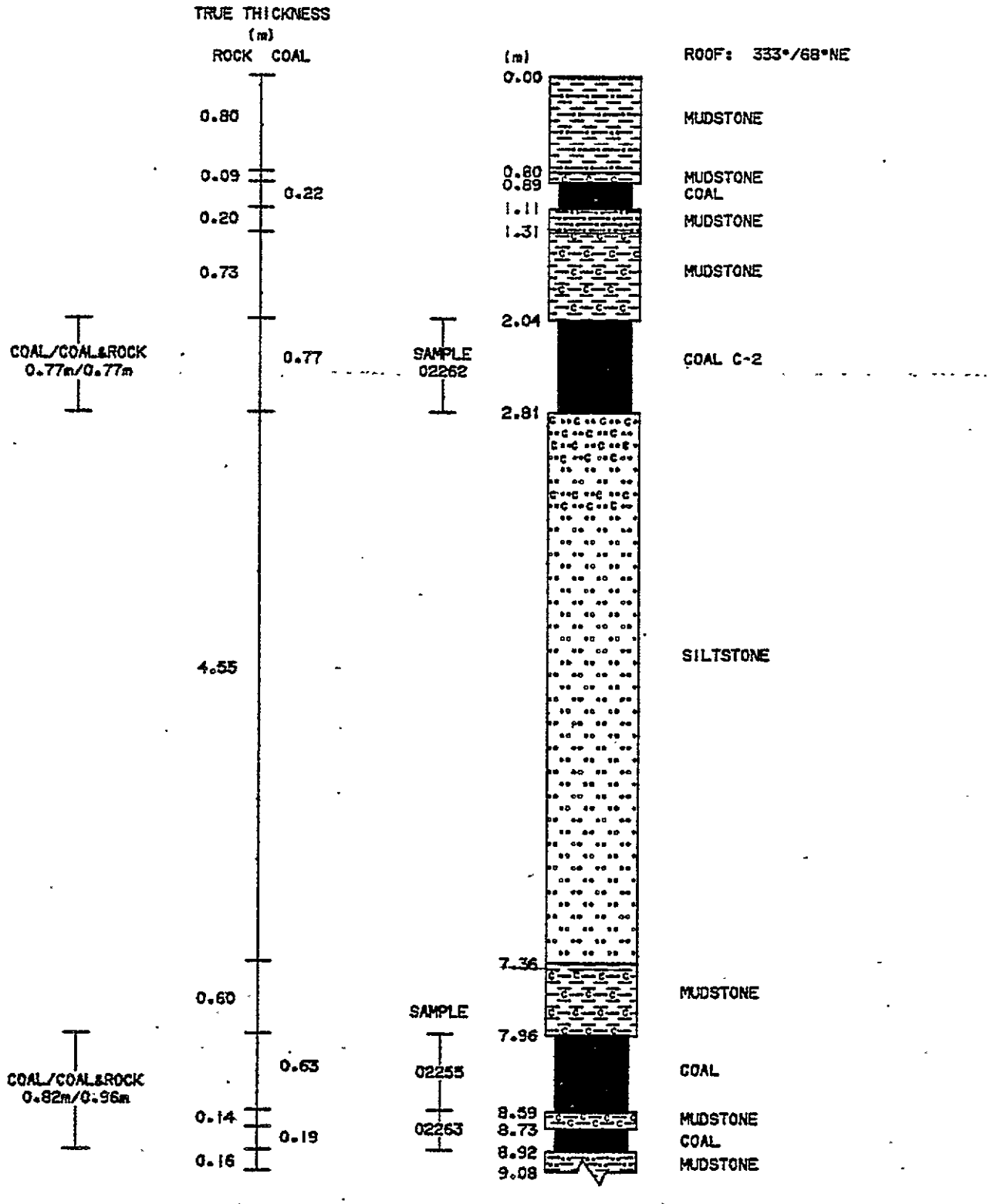
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	16.06	16.62	0.56			MUDSTONE	CARB.DK.GY LISTRIC SURF, PL DEBRIS THROUGHOUT (CAR B & COALY), SILTY & LESS CARB AT BASE, 4CM COAL BD AT BASE OVERLAIN BY 10CM FE -RICH BD.
	16.62	17.62	1.00			SANDSTONE	SLTY.VFG.M.BN GY-BN, SILICIOUS, BLKY, NO PL FRAGS, RA RE CARB WISPS, BUFF TO RUSTY WTHRING. F LOOR.

* DENOTES MEASURED BCA



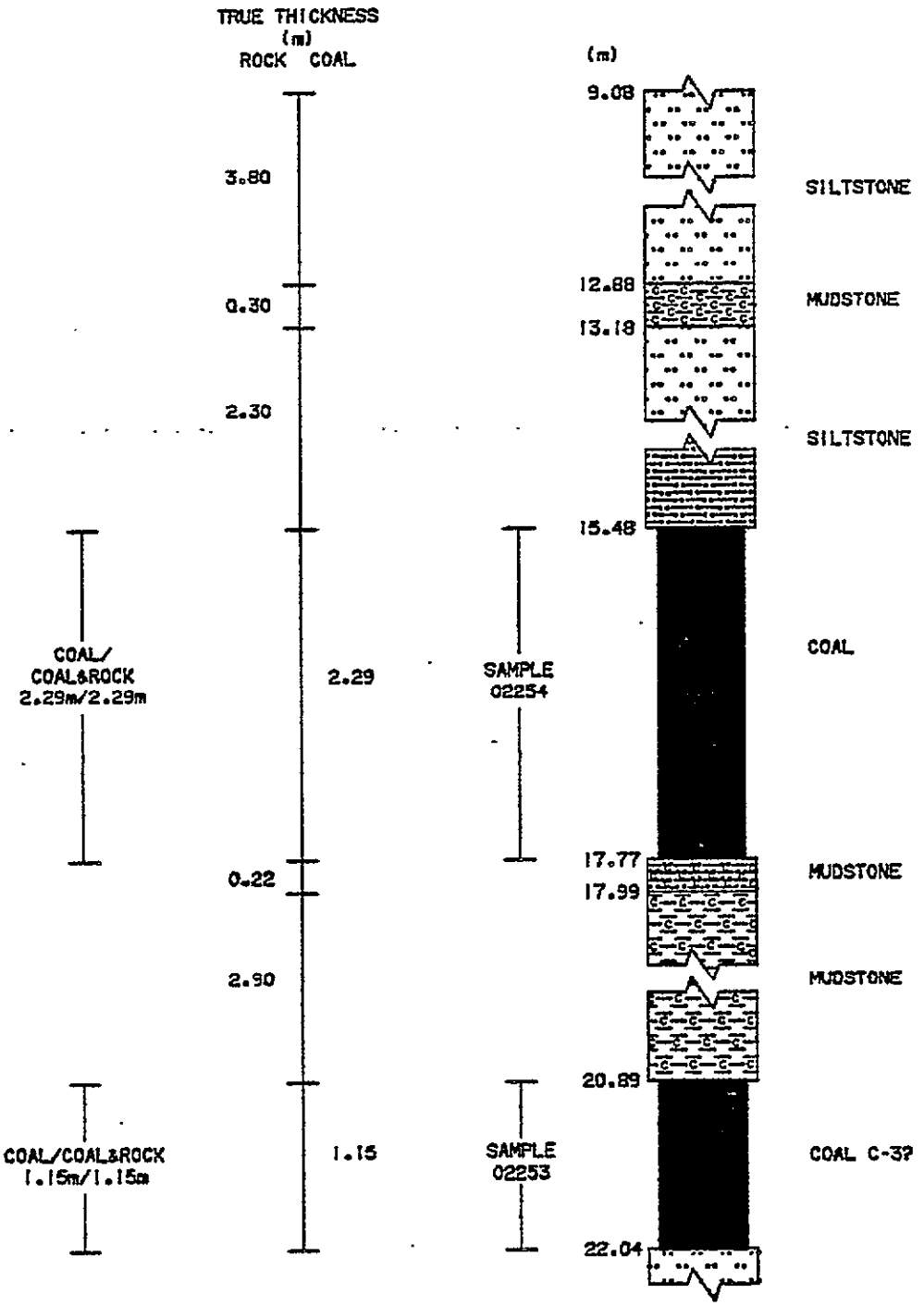
FORMATION	:	GETHING
UTM COORDINATES	:	6162460mN, 540250mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	N/A
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	1.0m
TRENCH LENGTH	:	37.27m
TRENCH BEARING	:	215°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83005

DRAWN BY: V. DUFORD	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 30/06/83
APPROVED BY: V. DUFORD	PAGE 1 OF 3

GDR:1205,571830986001.LOG

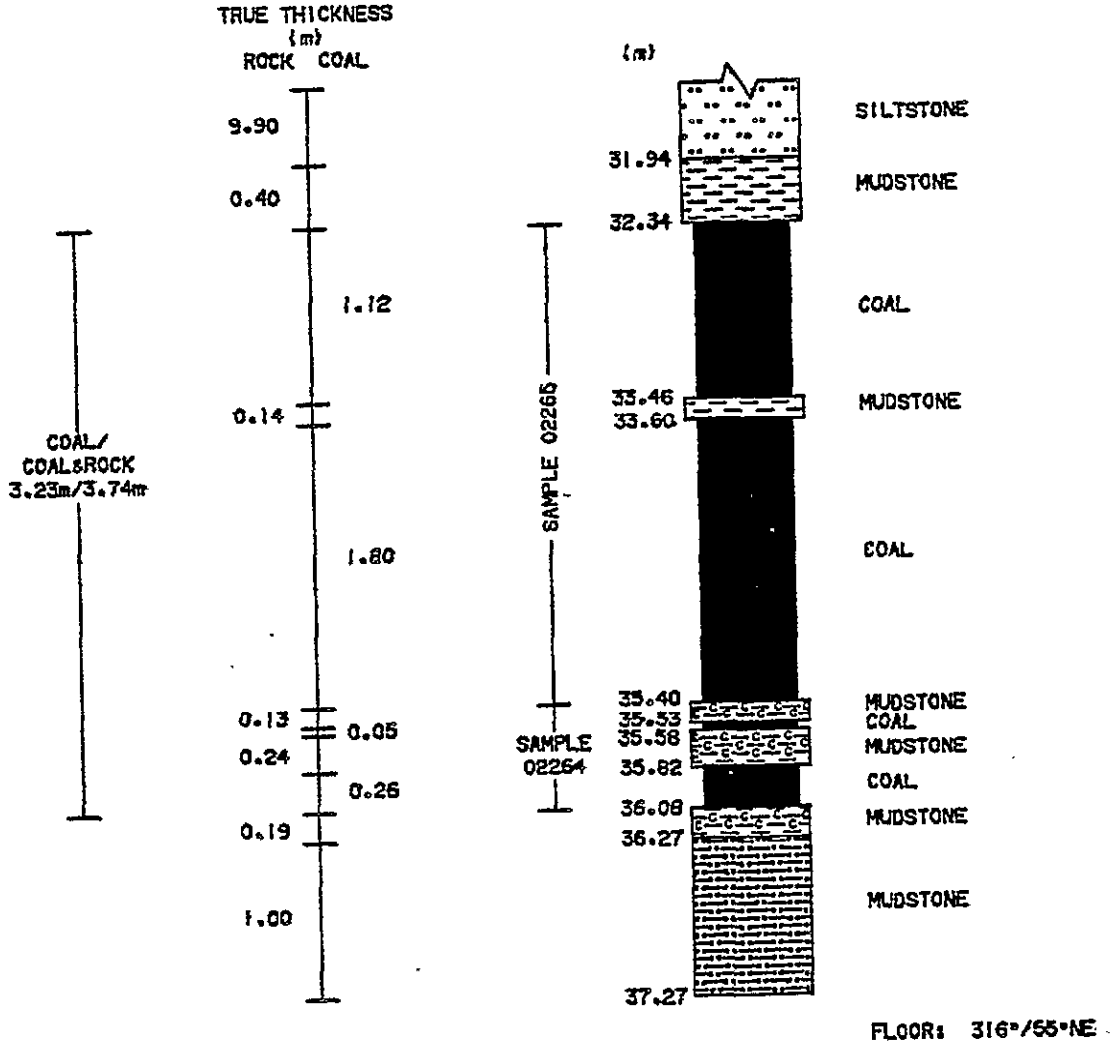


GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83005

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 30/06/85
APPROVED BY: V. DUFORD	PAGE 2 OF 3

GSD:1205,571830986001.L06



GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83005

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 30/06/83
APPROVED BY: V. DUFORD	PAGE 3 OF 3

GDR:[205,57]83068002.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.80	0.80			MUDSTONE	SLTY.DK.GY ROOF. PL FRAGS, FE ST IN BOTTOM HALF, FRAC AT BASE. BLKY.
	0.80	0.89	0.09			MUDSTONE	CARB.BLK SOFT, ABNT COAL LAM.
	0.89	1.11	0.22			COAL	SHRD MNR FE STN, BECOMES CARB MUDST IN BASAL 2CM.
	1.11	1.31	0.20			MUDSTONE	SLTY.DK.GY WTHRS LT BN,. BDG INDISTINCT, IRREGULAR FRAC.
	1.31	2.04	0.73			MUDSTONE	BROAD CARB INTBDS UP TO 10CM THICK, HIGHLY FRAC PARALLEL TO BDG.
	2.04	2.81	0.77	02262		COAL	C-2 CRUMBLY TO PWRD.
	2.81	7.36	4.55			SILTSTONE	GY.VTHNB GY-BN, CARB PL DEBRIS, STEMS, MNR CARB INTBDS IN UPPER 1/2, BLKY IN MIDDLE, FRAC PARALLEL BDG. 310/54NE.
	7.36	7.96	0.60			MUDSTONE	CARB.DK.GY MNR FE STN, LISTRIC SURF, RUBBLY.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	7.96	8.59	0.63	02255		COAL	PWRD
	8.59	8.73	0.14	02263		MUDSTONE	CARB.DK.GY LISTRIC SURF.
	8.73	8.92	0.19	02263		COAL	CRUMBLY & PWDRY.
	8.92	9.08	0.16			MUDSTONE	SLTY.DK.GY CARB, COALIFIED PL FRAGS (STEMS & GRASS BLADES), WTHRS RUSTY BN, CRUMBLY.
	9.08	12.88	3.80			SILTSTONE	GY GY-GN, BLKY TO IRREGULARILY FRAC, BDG INDISTINCT, COALIFIED PL FRAGS (FERN LEAVES), MUDST INTBDS IN BASAL HALF, 20CM FE ST BAND IN MIDDLE OF UNIT.
	12.88	13.18	0.30			MUDSTONE	CARB ABNT PL FOS (STEMS & LEAVES), SOFT, MNR BRIGHT COAL LNS, MNR FE STN.
	13.18	15.48	2.30			SILTSTONE	W MUDST INTBDS UP TO 0.40M THICK, MNR RUSTY PL DEBRIS, LISTRIC SURF IN MUDST INTBDS, BDS ARE BLKY TO HIGHLY FRAC.
	15.48	17.77	2.29	02254		COAL	PWRD CRUMBLY, LISTRIC SURF, SLIGHTLY MUDDY TOWARDS BASE.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	17.77	17.99	0.22			MUDSTONE	SLTY.DK.GY RED-ORNG-BN-GY WTHRING, ABNT LARGE COAL Y & CARB PL FRAGS W SOME PL IMPRINTS, M ORE BROADLY FRAC.
	17.99	20.89	2.90			MUDSTONE	CARB.DK.GY HIGHLY FRAC || TO BDG, CARB PL DEBRIS & FOS LEAVES/BLADES OF GRASS, INDISTINCT BDG.
	20.89	22.04	1.15	02253		COAL	C-3.PWRD C-3?, 2 MNR CARB MUDST SPLITS IN MIDDLE
	22.04	31.94	9.90			SILTSTONE	GY.LAM.XBDG GY-GN, COALIFIED PL DEBRIS AT TOP, RUST Y WTHRING, MNR MUDST INTBDS, SML SCALE XBDG, TOPS UP, PREDOMINANTLY COVERED AR EA.
	31.94	32.34	0.40			MUDSTONE	DK.GY WTHRS ORNG-GY, COALIFIED PL FRAGS, IRRE GULARILY FRAC, #TRENCH ORIENTATION CHAN GES TO 284 #TRENCH SLOPE TO APPROX 5 #M EASUREMENTS HEREAFTER WERE DIFFICULT TO OBTAIN.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	32.34	33.46	1.12	02265		COAL	PWRD
	33.46	33.60	0.14	02265		MUDSTONE	GY GY-GN, PL DEBRIS, LISTRIC SURF, RARE CO ALIFIED PL FRAG, WTHRS ORNG GY, 313/68N E.
	33.60	35.40	1.80	02265		COAL	PWRD CRUMBLY, THICKNESS MAY NOT BE EXACT.
	35.40	35.53	0.13	02264		MUDSTONE	CARB AS ABV.
	35.53	35.58	0.05	02264		COAL	
	35.58	35.82	0.24	02264		MUDSTONE	CARB AS ABV.
	35.82	36.08	0.26	02264		COAL	PWRD CRUMBLY.
	36.08	36.27	0.19			MUDSTONE	CARB

* DENOTES MEASURED BCA

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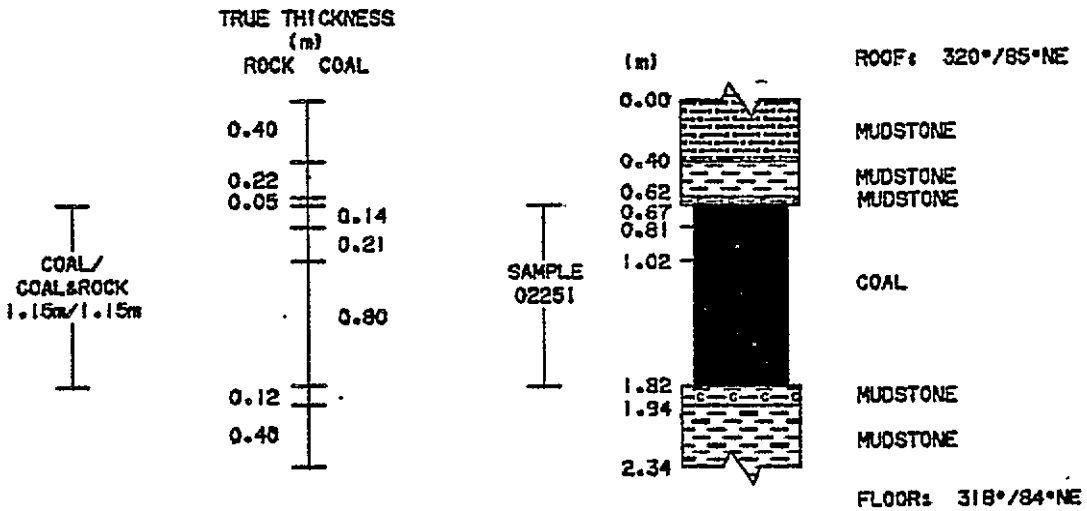
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	36.27	37.27	1.00			MUDSTONE	SLTY.GY FLOOR: GY-GN, COALIFIED PL FRAGS AND MO RE CARB TOWARDS BASE, BLKY, BROAD IRREG ULAR FRAC, INDISTINCT BDG. 316/55NE.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6165470mN, 546290mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-091
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	2.34m
TRENCH BEARING	:	184°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83006

DRAWN BY: E.SWANSEROSON	SCALE: 1:50
LOGGED BY: E. SWANSEROSON	DATE: 01/07/83
APPROVED BY: V. DUFORD	

GDR:1206,ST1830986002.LOG

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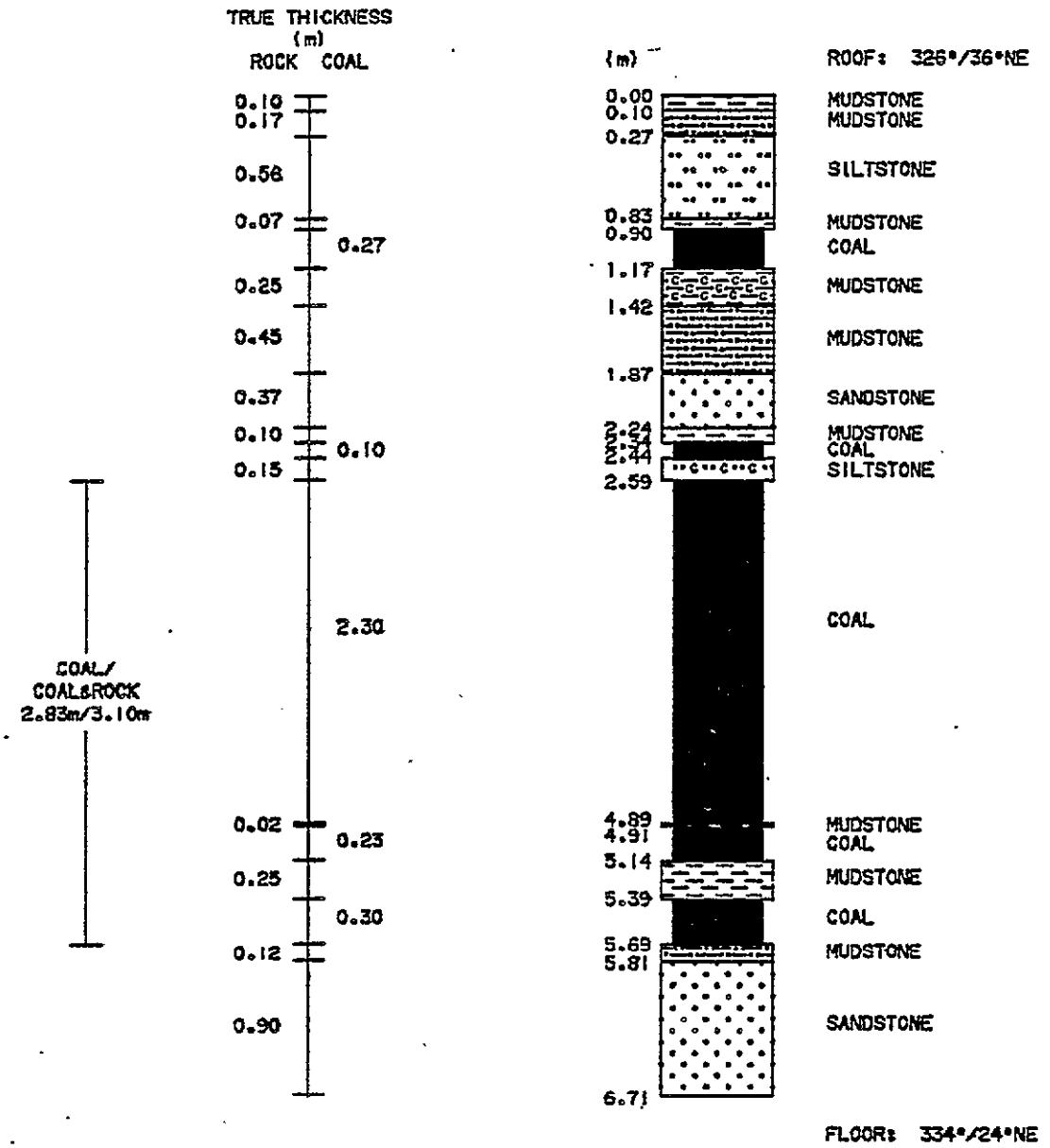
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.40	0.40			MUDSTONE	SLTY.DK.GY.MAS BLKY, IRREGULAR FRAC, MNR CARB PL DEBRI S. ROOF.
	0.40	0.62	0.22			MUDSTONE	DK.GY SOFT.
	0.62	0.67	0.05			MUDSTONE	CARB.BLK MNR COAL STRGS.
	0.67	0.81	0.14	02251		COAL	PWRD MNR MUDST LAM.
	0.81	1.02	0.21	02251		COAL	PWRD FE STN, SML SLTST PODS READILY WTHR TO RUST COLOR - POSSIBLE OXIDIZING PHASE I N ORIGINAL DEPOSITIONAL ENVIRONMENT.
	1.02	1.82	0.80	02251		COAL	PWRD MNR MUDST BDS (<= 1.0CM), 3CM BRIGHT BA ND IN MIDDLE.
	1.82	1.94	0.12			MUDSTONE	CARB.BLK ABNT COAL STRGS.
	1.94	2.34	0.40			MUDSTONE	DK.GY IRREGULARILY FRAC ALONG BDG, MNR FE STN , MNR COAL STRGS, INDISTINCT BDG.

* DENOTES MEASURED BCA



FORMATION : GETHING
UTM COORDINATES : 6166250mN, 546400mE
MAP CARD NUMBER : N/A
AIR PHOTO NUMBER: BC7191-091
TRENCH DEPTH : 0.5m
TRENCH WIDTH : 0.5m
TRENCH LENGTH : 6.71m
TRENCH BEARING : 208°
TRENCH SLOPE : 60°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83007

DRAWN BY: D. GOLPH	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 01/07/83
APPROVED BY: Y. DUFORD	

080:[200,67]830964002.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83007

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.GY.THNB MNR FE STN, HIGHLY FRAC, FRAC MASK BDG, RECESSIVE UNIT.
	0.10	0.27	0.17			MUDSTONE	SLTY.GY GN-GY, GRADATIONAL UPPER CTC, BDG INDISTINCT, HIGH DEGREE OF IRREGULAR FRAC, FE STN GRASS FOS.
	0.27	0.83	0.56			SILTSTONE	GY.VTHNB.RTB ROOTLETS AT TOP, TOPS UP, XBDG, BLKY, RESISTIVE, RUST WTHRING.
	0.83	0.90	0.07			MUDSTONE	CARB.DK.GY.THNB ABNT COAL LAM, MNR FE STN.
	0.90	1.17	0.27			COAL	PWRD
	1.17	1.42	0.25			MUDSTONE	CARB.DK.GY.THNB
	1.42	1.87	0.45			MUDSTONE	SLTY.GY GY-GN, ABNT CARB PL FRAGS, FE STN AT TOP, IRREGULAR FRAC.
	1.87	2.24	0.37			SANDSTONE	VFG.WEL.GY.VTHNB BN-GY, RUST WTHRING.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83007

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.24	2.34	0.10			MUDSTONE	CARB.BLK.PWRD
	2.34	2.44	0.10			COAL	PWRD
	2.44	2.59	0.15			SILTSTONE	CARB.DK.GY COALIFIED PL DEBRIS.
	2.59	4.89	2.30			COAL	DOMINANTLY PWRD, POSSIBLY HAS CARB MUDS T BDS IN UPPER HALF.
	4.89	4.91	0.02			MUDSTONE	M.BN SOFT, LNS.
	4.91	5.14	0.23			COAL	PWRD
	5.14	5.39	0.25			MUDSTONE	DK.GY LISTRIC SURF, FRAC, CARB PL FRAGS.
	5.39	5.69	0.30			COAL	PWRD
	5.69	5.81	0.12			MUDSTONE	SLTY.M.GY PARTLY CARB.

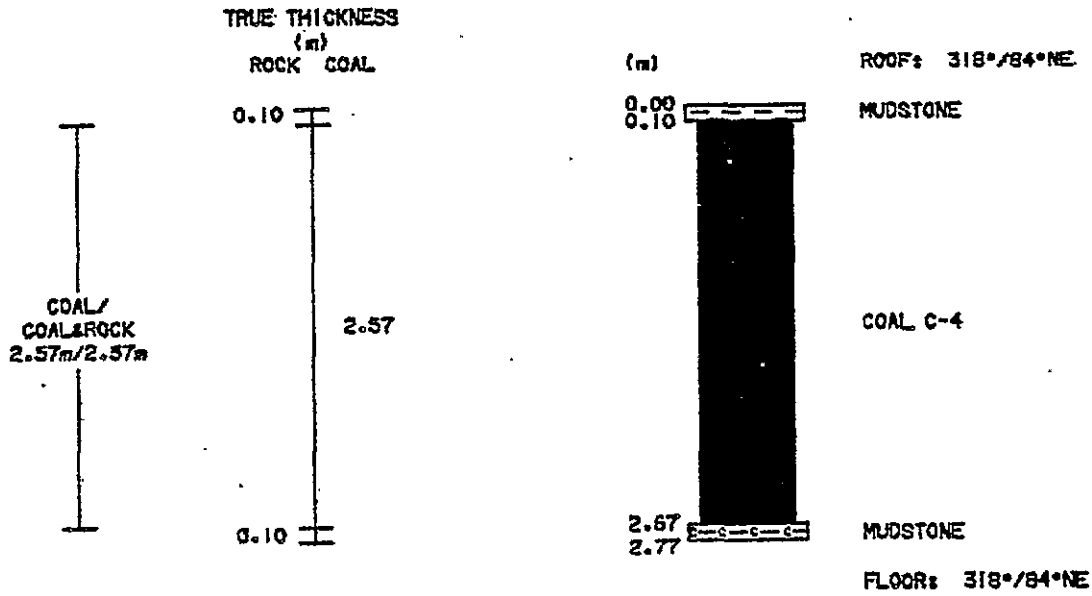
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83007

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	5.81	6.71	0.90			SANDSTONE	VFG.WEL.ORNG.THNB ORNG-GY, HIGHLY SILICIOUS, RARE CARB PL HASH, INTBD W 3CM THICK RECESSIVE CARB SLTST. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6166450mN, 546350mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-091
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	2.77m
TRENCH BEARING	:	220°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83008

DRAWN BY: M.J. MILNE	SCALE: 1:50
LOGGED BY: M.J. MILNE	DATE: 01/07/83
APPROVED BY: V. DUFORD	

GDR:1206,5718309865032.LOG

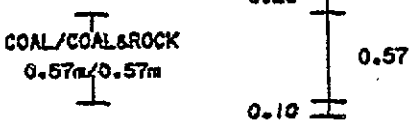
XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83008

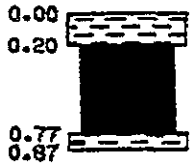
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.GY RUBBLY, FIS, WET. ROOF.
	0.10	2.67	2.57			COAL	C-4 80% DULL, 20% BRIGHT.
	2.67	2.77	0.10			MUDSTONE	CARB.DK.GY CARB PL FRAGS, SLIGHTLY FE STN, RUBBLY. FLOOR.

* DENOTES MEASURED BCA



TRUE THICKNESS
(m)

ROCK	COAL
0.20	
	0.57
0.10	



ROOF: 327°/25°NE

MUDSTONE

COAL C-4

MUDSTONE

FLOOR: 327°/25°NE

FORMATION	:	GETHING
UTM COORDINATES	:	6166250mN, 546400mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER:		BC7191-091
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	0.87m
TRENCH BEARING	:	237°
TRENCH SLOPE	:	90° (VERTICAL)

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83009

DRAWN BY: M.J. MILNE	SCALE: 1:50
LOGGED BY: R. INKSTER	DATE: 01/07/85
APPROVED BY: V. DUFORD	

GDR:[206,571]83096002.LOG

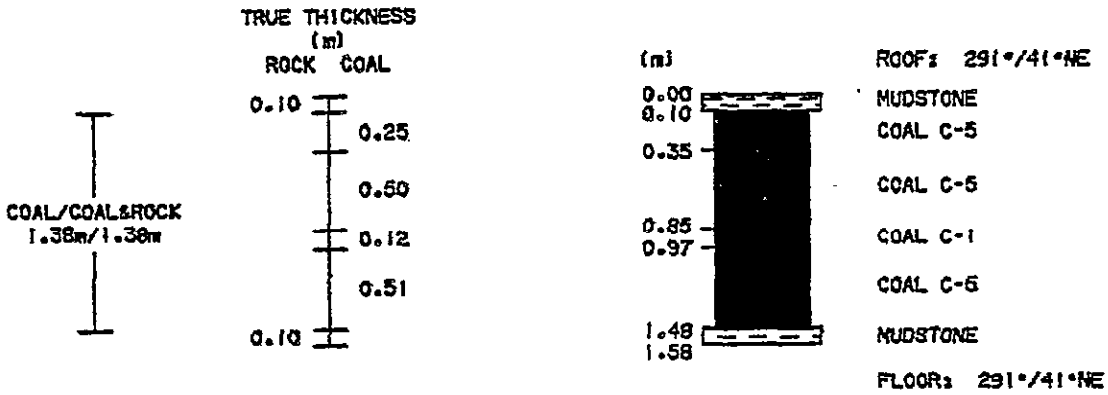
XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83009

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.20	0.20			MUDSTONE	DK.GY FLAGGY, FREQUENT TO FEW PL FRAGS, HEAVILY FE STN. ROOF.
	0.20	0.77	0.57			COAL	C-4 FE STN IN BOTTOM 0.30M.
	0.77	0.87	0.10			MUDSTONE	SML COALY STRGS, ABNT CARB PL FRAGS, HEAVILY FE STN. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6166250mN, 546400mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-091
TRENCH DEPTH	:	1.7m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.68m
TRENCH BEARING	:	201°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83010

DRAWN BY: M.J. MILNE	SCALE: 1:50
LOGGED BY: N.J.MILNE	DATE: 01/07/83
APPROVED BY: V. DUFORD	

080:120d,671850966002.L08

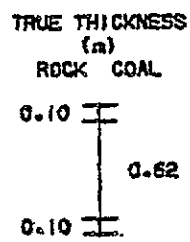
XXXXX

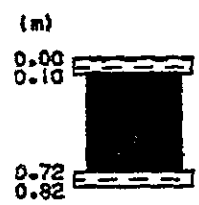
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83010

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	M.GY RUBBLY. ROOF.
	0.10	0.35	0.25			COAL	C-5 DULL, PWRDY.
	0.35	0.85	0.50			COAL	C-5 DULL, BLKY, MNR FE BANDING.
	0.85	0.97	0.12			COAL	C-1 SHRD.
	0.97	1.48	0.51			COAL	C-5 HARD.
	1.48	1.58	0.10			MUDSTONE	REDDISH W ORNG. FLOOR.

* DENOTES MEASURED BCA





ROOF:
MUDSTONE

COAL C-5

MUDSTONE

FLOOR:

STRIKE AND DIP ON ADJACENT SANDSTONE: 299°/83°NE

FORMATION	:	GETHING
UTM COORDINATES	:	6164547mN, 545210mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-091
TRENCH DEPTH	:	0.8m
TRENCH WIDTH	:	0.9m
TRENCH LENGTH	:	0.92m
TRENCH BEARING	:	209°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83011

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: M.J. MILNE	DATE: 04/07/83
APPROVED BY: Y. DUFORD	

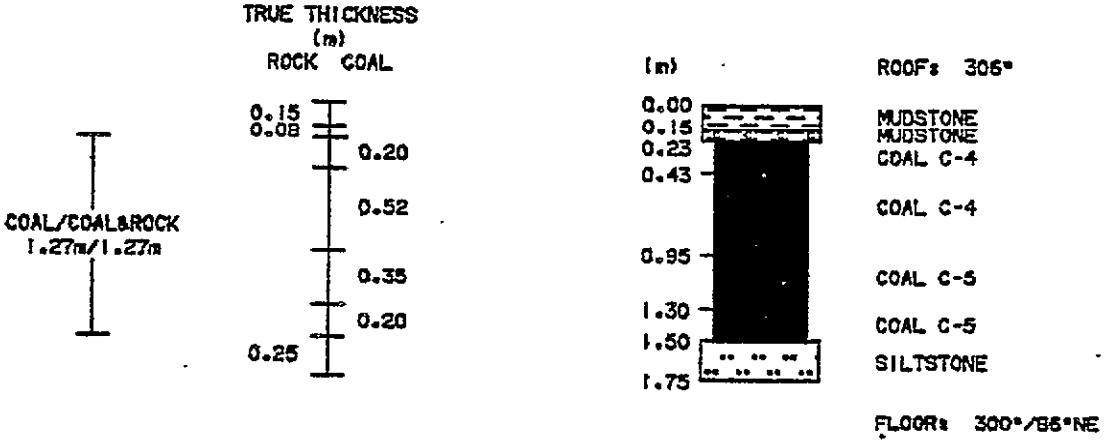
XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83011

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	M.BN RUBBLY, FE STN, PL FRAGS. ROOF.
	0.10	0.72	0.62			COAL	C-5 SHINY, SHRD, CRUMBLES PWDRY, WET IN PLACES, SOFT.
	0.72	0.82	0.10			MUDSTONE	M.GY RUBBLY, WET, CARB PL FRAGS, MNR FE STN. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6164140mN, 545060mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-091
TRENCH DEPTH	:	1.7m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	1.75m
TRENCH BEARING	:	210°
TRENCH SLOPE	:	

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83012

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: A. MOTYKA	DATE: 04/07/85
APPROVED BY: V. DUFORD	

490:1205,5718505:86003.LOG

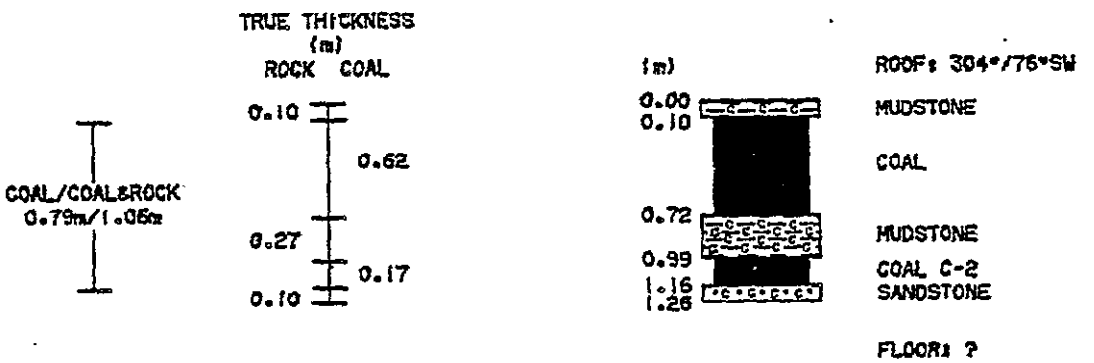
XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83012

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.15	0.15			MUDSTONE	BN GY-BN, MNR FE STN. ROOF.
	0.15	0.23	0.08			MUDSTONE	CARB.BLK COALY. PART OF ROOF.
	0.23	0.43	0.20			COAL	C-4 HARD, CRUMBLES PWDRY.
	0.43	0.95	0.52			COAL	C-4 PWRD, SHRD, SEMIHARD.
	0.95	1.30	0.35			COAL	C-5 DULL W SHINY FLECKS, PWDRY.
	1.30	1.50	0.20			COAL	C-5 DULL, PWDRY.
	1.50	1.75	0.25			SILTSTONE	M.GY WTHRD ORNG BN, FE STN. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6164550mN, 545425mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-091
TRENCH DEPTH	:	0.7m
TRENCH WIDTH	:	0.4m
TRENCH LENGTH	:	1.26m
TRENCH BEARING	:	114°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY · ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83013

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: M.J. MILNE	DATE: 04/07/83
APPROVED BY: W. DUFORD	

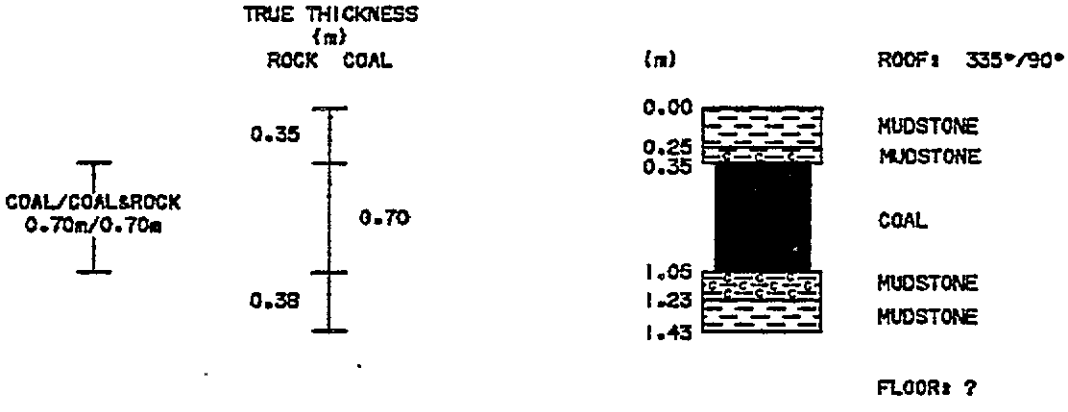
XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83013

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.M.GY WTHRD ORNG GY, FE STN, CARB PL FRAGS, C OALY STRGS. ROOF.
	0.10	0.72	0.62			COAL	SHRD, SHINY, V MNR FE STN, PWDR WHEN CR USHED, SOFT.
	0.72	0.99	0.27			MUDSTONE	CARB V CARB, COALY.
	0.99	1.16	0.17			COAL	C-2 SHINY, SHRD, MNR FE STN, OXIDIZED.
	1.16	1.26	0.10			SANDSTONE	CARB.FG.GY WTHRS ORNG BN, CALCT VEINING, V.CARB, P OSSIBLY SLUMPED. FLOOR?, FOLLOWED BY 2 COALY STRGS 4CM INTBD W MUDST.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6175815mN, 541330mE
MAP CARD NUMBER	:	930/9WK-10
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.43m
TRENCH BEARING	:	255°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83014

DRAWN BY: C. GOODINGS	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 05/07/83
APPROVED BY: V. DUFORD	

080:1208,671830966003.LOG

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83014

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25			MUDSTONE	DK.GY RUBBLY, FE STN, COALY STRG, SLIGHTLY CA RB. ROOF.
	0.25	0.35	0.10			MUDSTONE	CARB.BLK ABNT COALY STRG, RUBBLY TO CRUMBLY. PAR T OF ROOF.
	0.35	1.05	0.70			COAL	PWRD, OCC BRIGHT CUBES & CHUNKS.
	1.05	1.23	0.18			MUDSTONE	CARB PWDR, COALY STRGS.
	1.23	1.43	0.20			MUDSTONE	DK.BN GY-BN, SLIGHTLY CARB RESIDUE ALONG FRAC SURFACES, BECOMING SLTY & RUSTY AT BAS E. FLOOR.

* DENOTES MEASURED BCA

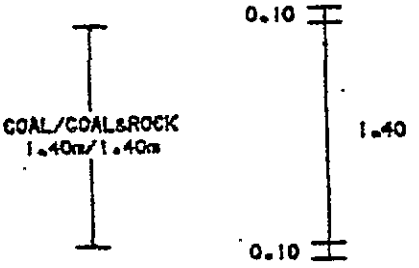
XXXXX

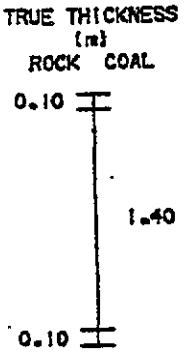
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

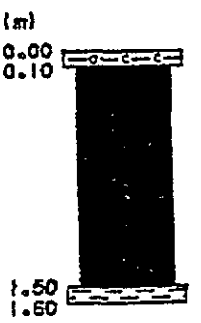
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83015

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB BN-GY. ROOF.
	0.10	1.50	1.40			COAL	C-6 MUDDY, BONE COAL.
	1.50	1.60	0.10			MUDSTONE	LT BN TO BUFF, PL FOS. FLOOR.

* DENOTES MEASURED BCA







ROOF: 309°/88°NE

MUDSTONE

COAL

MUDSTONE

FLOOR: ?

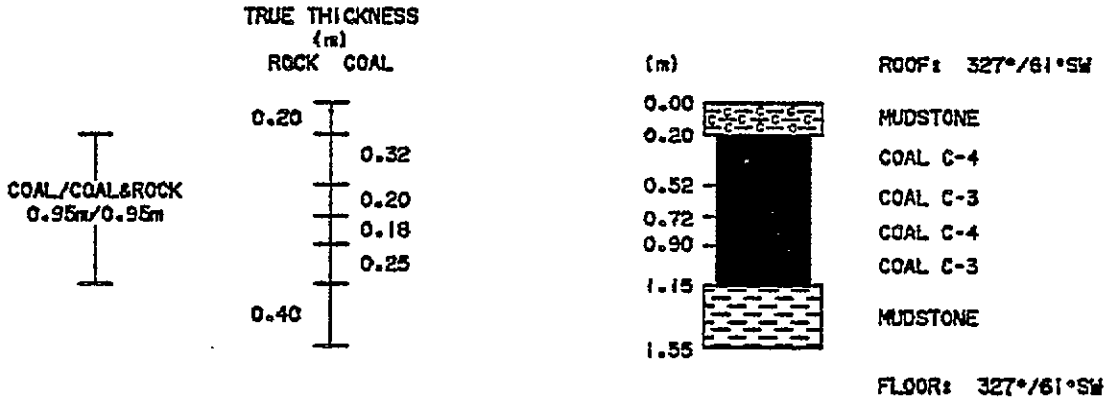
FORMATION	:	GETHING
UTM COORDINATES	:	6164540mN, 545210mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-091
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.4m
TRENCH LENGTH	:	1.60m
TRENCH BEARING	:	203°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83015

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 04/07/83
APPROVED BY: V. DUFORD	

GDR:1205,571830596003.LOG



FORMATION	:	GETHING
UTM COORDINATES	:	6175375mN, 540960mE
MAP CARD NUMBER	:	930/9WK-10
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.60m
TRENCH BEARING	:	237°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83016

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 05/07/83
APPROVED BY: V. DUFORD	

GDR:[205,571830968003.LOG

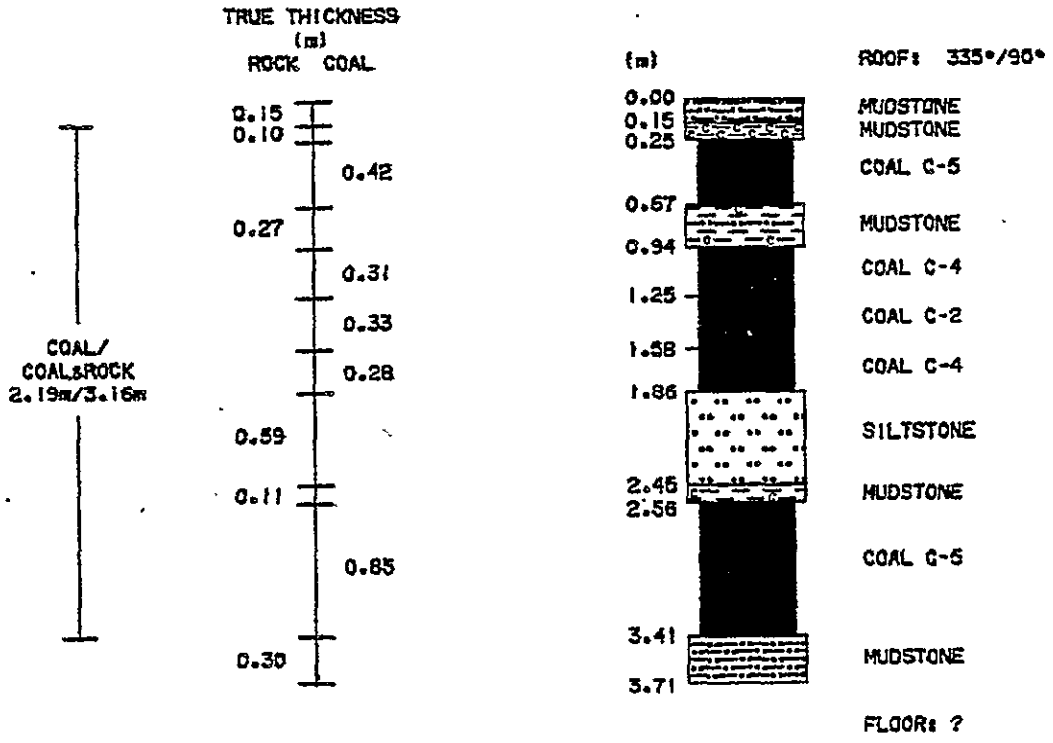
XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83016

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.20	0.20			MUDSTONE	CARB.BLK ABNT COALY STRGS, LESS CARB AT TOP, CRUMBLY. ROOF.
	0.20	0.52	0.32			COAL	C-4 MNR BRIGHT STRGS, CRUMBLY TO PWDRY.
	0.52	0.72	0.20			COAL	C-3 CRUMBLY.
	0.72	0.90	0.18			COAL	C-4
	0.90	1.15	0.25			COAL	C-3
	1.15	1.55	0.40			MUDSTONE	DK.GY CARB LAM, WTHRS LT GY, PLATEY TO RUBBLY. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6175815mN, 541325mE
MAP CARD NUMBER	:	930/9WK-10
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	3.71m
TRENCH BEARING	:	255°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83017

DRAWN BY: C. GOODINGS	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 06/07/83
APPROVED BY: V. DUFORD	

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83017

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.15	0.15			MUDSTONE	SLTY.BN RUSTY WTHRING, FAINT LAM. PART OF ROOF.
	0.15	0.25	0.10			MUDSTONE	CARB.BLK COAL STRGS.
	0.25	0.67	0.42			COAL	C-5 WET, CRUMBLY, TR CARB MUDST STRGS TOWAR D BASE.
	0.67	0.94	0.27			MUDSTONE	DK.GY SLIGHTLY CARB, SLTY BAND IN MIDDLE OF U NIT.
	0.94	1.25	0.31			COAL	C-4 MNR BRIGHT BANDS, CRUMBLY.
	1.25	1.58	0.33			COAL	C-2 HARD.
	1.58	1.86	0.28			COAL	C-4 HARD TO CRUMBLY, MNR BRIGHT BANDS.
	1.86	2.45	0.59			SILTSTONE	DK.GY V RUSTY WTHRING, SLIGHTLY LAM, ROOTLETS ?.

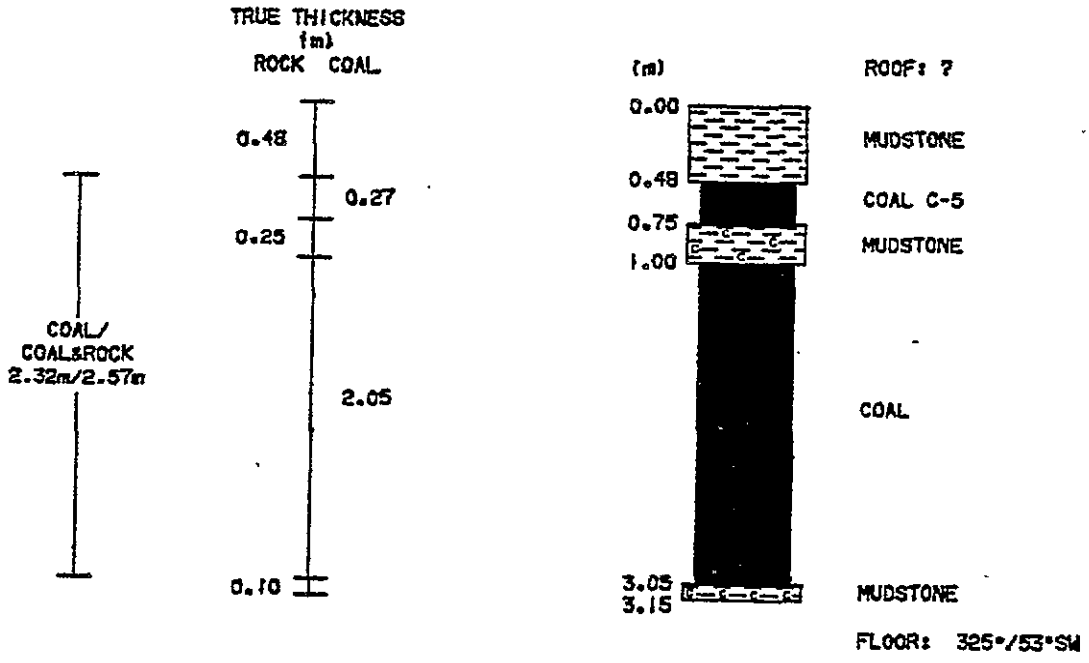
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83017

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.45	2.56	0.11			MUDSTONE	DK.GY SLIGHTLY CARB, RUBBLY, MNR THIN BRIGHT COAL WISPS.
	2.56	3.41	0.85			COAL	C-5 TRACE BRIGHT COAL STRGS, HARD TO RUBBLY
	3.41	3.71	0.30			MUDSTONE	SLTY.DK.GY RUSTY LAM, MNR CARB FRAGS & RUSTY FOS L EAF IMPRINTS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6175375mN, 540950mE
MAP CARD NUMBER	:	930/9WK-10
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	0.7m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	3.50m
TRENCH BEARING	:	220°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83018

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 05/07/83
APPROVED BY: V. DUFORD	

GDR1265.571630966004.LOG

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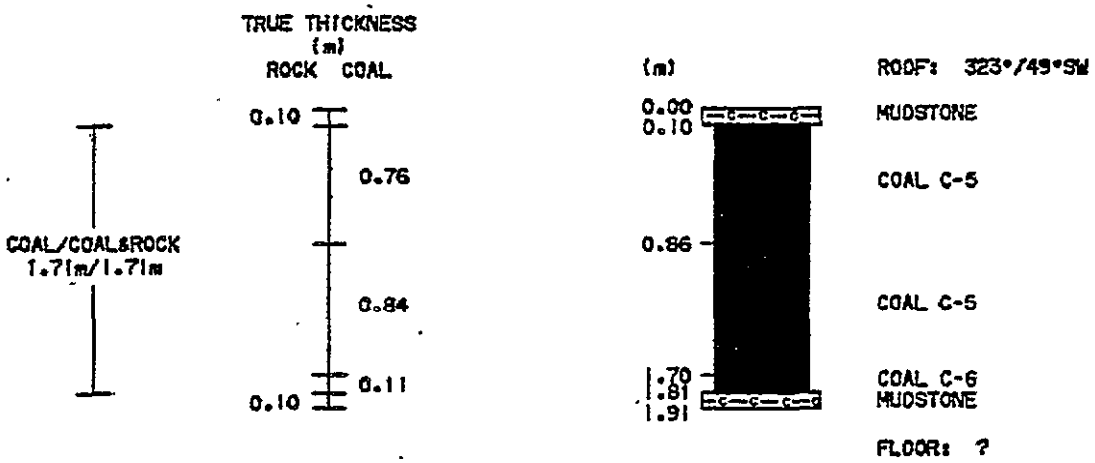
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83018

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.48	0.48			MUDSTONE	DK.GY DK GY TO BLK, BECOMING CARB AT BASE, WT HRS LT GY TO BLK, MNR BRIGHT COALY WISPS, MNR CARB PL FRAGS. ROOF.
	0.48	0.75	0.27			COAL	C-5 PWDRY, WET.
	0.75	1.00	0.25			MUDSTONE	CARB.DK.GY DK GY TO BLK, WTHRS LT GY, MNR FE STN, MNR BRIGHT COALY STRGS.
	1.00	3.05	2.05			COAL	PWDR, WET, POSSIBLE MNR BRIGHT BANDS, IN PLACES MIXED W OVERBURDEN, SLUMP?.
	3.05	3.15	0.10			MUDSTONE	DK.GY DK BN TO DK GY, SLIGHTLY SLTY, HARD, V MICACEOUS, COALY & CARB LAM, NO APPARENT PL FOS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6175389mN, 540857mE
MAP CARD NUMBER	:	930/9WK-10
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.91m
TRENCH BEARING	:	242°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83019

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 05/07/83
APPROVED BY: V. OUFORD	

GDR:[205.571830966004.LOG

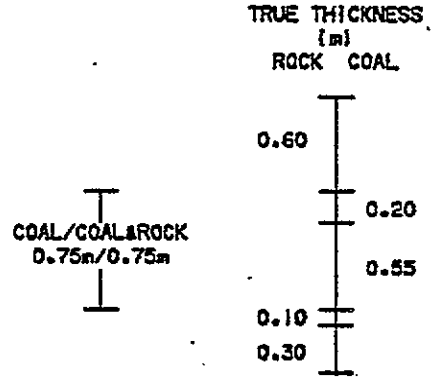
XXXXX

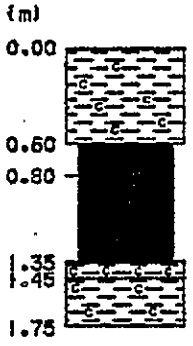
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83019

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY.LAM FE STN, PL FOS, FIS. ROOF.
	0.10	0.86	0.76			COAL	C-5 DULL, PWDRY, SOFT.
	0.86	1.70	0.84			COAL	C-5 SHINY, BREAKS IN BLOCKS, HARD.
	1.70	1.81	0.11			COAL	C-6 PWDRY, MUDDY, SOFT.
	1.81	1.91	0.10			MUDSTONE	FE STN, FIS. FLOOR.

* DENOTES MEASURED BCA





ROOF: 341°/73°SW

MUDSTONE

COAL C2-C1?

COAL C-2

MUDSTONE

MUDSTONE

FLOOR: ?

FORMATION	:	GETHING
UTM COORDINATES	:	6165232mN, 545745mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-090
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.75m
TRENCH BEARING	:	272°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-38020

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 07/07/83
APPROVED BY: V. DUFORD	

GDR1205.57183056004.LOG

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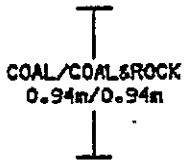
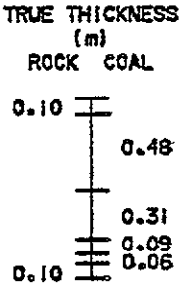
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

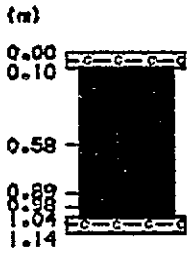
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83020

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.60	0.60			MUDSTONE	DK.GY SLIGHTLY CARB, FE STN, EVIDENCE OF SLUMPING. ROOF.
	0.60	0.80	0.20			COAL	C-2 C-2 - C-1?, BRIGHT, HARD.
	0.80	1.35	0.55			COAL	C-2 CHUNKY, HARD.
	1.35	1.45	0.10			MUDSTONE	CARB.DK.GY
	1.45	1.75	0.30			MUDSTONE	SLIGHTLY CARB, FE STN, SLUMPED?. FLOOR.

* DENOTES MEASURED BCA







ROOF: 323°/55°SW

MUDSTONE

COAL

COAL C-1

COAL

COAL

MUDSTONE

FLOOR: 323°/55°SW

FORMATION	:	GETHING
UTM COORDINATES	:	6165242mN, 545745mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-090
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	1.14m
TRENCH BEARING	:	252°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83021

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 06/07/83
APPROVED BY: V. DUFORD	

GDR:[205,571830960004.LOG

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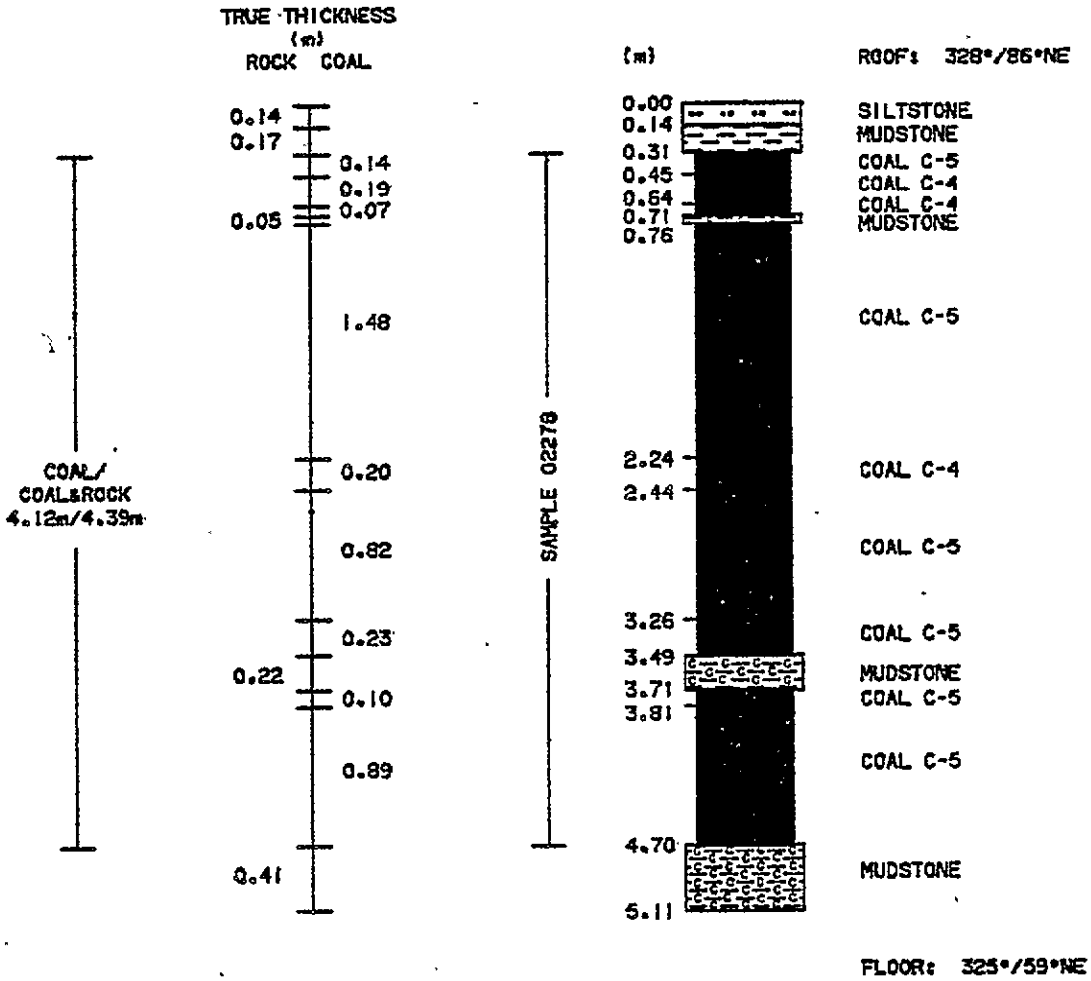
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83021

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	M.GY CARB TOWARDS BASE, MNR FE STN, FIS. ROO F.
	0.10	0.58	0.48			COAL	DULL, CRUMBLY.
	0.58	0.89	0.31			COAL	C-1 V HARD, BLKY, SHINY.
	0.89	0.98	0.09			COAL	DULL, PWDRY, SOFT.
	0.98	1.04	0.06			COAL	SHINY, FAIRLY HARD.
	1.04	1.14	0.10			MUDSTONE	CARB.DK.GY FE STN. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6175765mN, 540080mE
MAP CARD NUMBER	:	930/9WK-10
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	0.9m
TRENCH WIDTH	:	0.8m
TRENCH LENGTH	:	6.31m
TRENCH BEARING	:	274°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83022

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: R. INKSTER	DATE: 11/DEC/83

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83022

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.14	0.14			SILTSTONE	M.BN HEAVILY FE STN W FE LAM THROUGHOUT. ROO F.
	0.14	0.31	0.17			MUDSTONE	M-DK.GY MICACEOUS, TINY FE STN PL FRAGS, V MNR CARB PL FRAGS.
	0.31	0.45	0.14	02278		COAL	C-5 WET, PWDRY.
	0.45	0.64	0.19	02278		COAL	C-4 WET, SEMI HARD, V THIN MUDST LAM.
	0.64	0.71	0.07	02278		COAL	C-4 HARD, WET, SHRD.
	0.71	0.76	0.05	02278		MUDSTONE	CARB V HEAVILY FE STN IN BANDS.
	0.76	2.24	1.48	02278		COAL	C-5 WET, SEMI HARD, SHRD, BADLY WTHRD.
	2.24	2.44	0.20	02278		COAL	C-4 SEMI HARD, SHRD.
	2.44	3.26	0.82	02278		COAL	C-5 V MUDDY W SOME CARB FRAGS.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83022

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.26	3.49	0.23	02278		COAL	C-5 DULL, PWDR, SOFT, WET.
	3.49	3.71	0.22	02278		MUDSTONE	CARB.DK.GY
	3.71	3.81	0.10	02278		COAL	C-5 DULL, PWDR, SOFT.
	3.81	4.70	0.89	02278		COAL	C-5 MUDDY W CARB MATERIAL.
	4.70	5.11	0.41			MUDSTONE	CARB.M.GY FE STN, COALIFIED. FLOOR.

* DENOTES MEASURED BCA

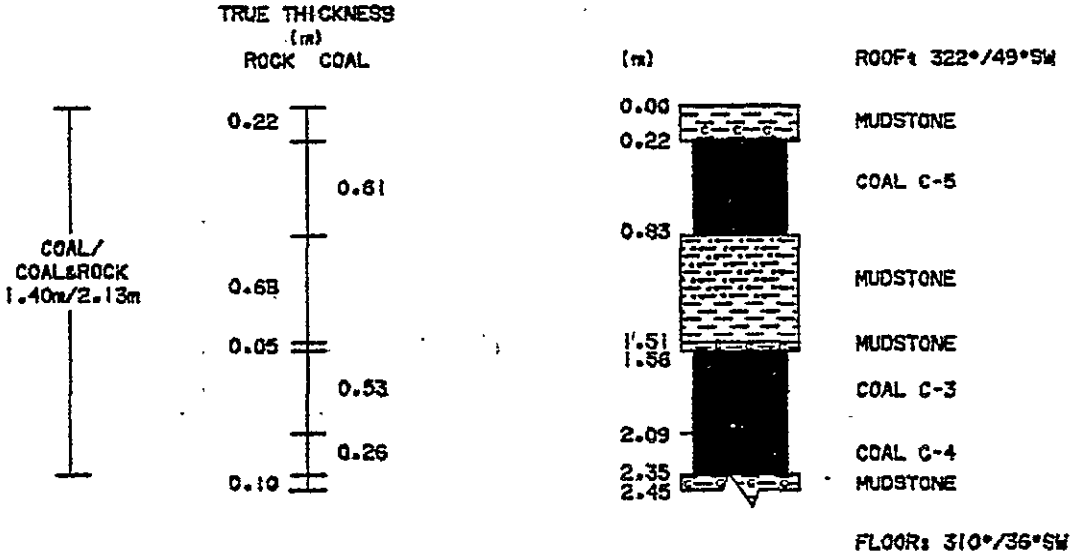
GULF CANADA RESOURCES INC. - COAL DIVISION

29/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

TRUE THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC83022										
		2278	0.31	4.70	100.00	4.120	0.270			4.12- 0.27



FORMATION	:	GETHING
UTM COORDINATES	:	6175080mN, 540695mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC81030-192
TRENCH DEPTH	:	0.3m
TRENCH WIDTH	:	0.4m
TRENCH LENGTH	:	2.63m
TRENCH BEARING	:	225°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83023

DRAWN BY: C. GOODINGS	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 05/07/83
APPROVED BY: V. DUFORD	

GDR:[E06,57]830986005.LOG

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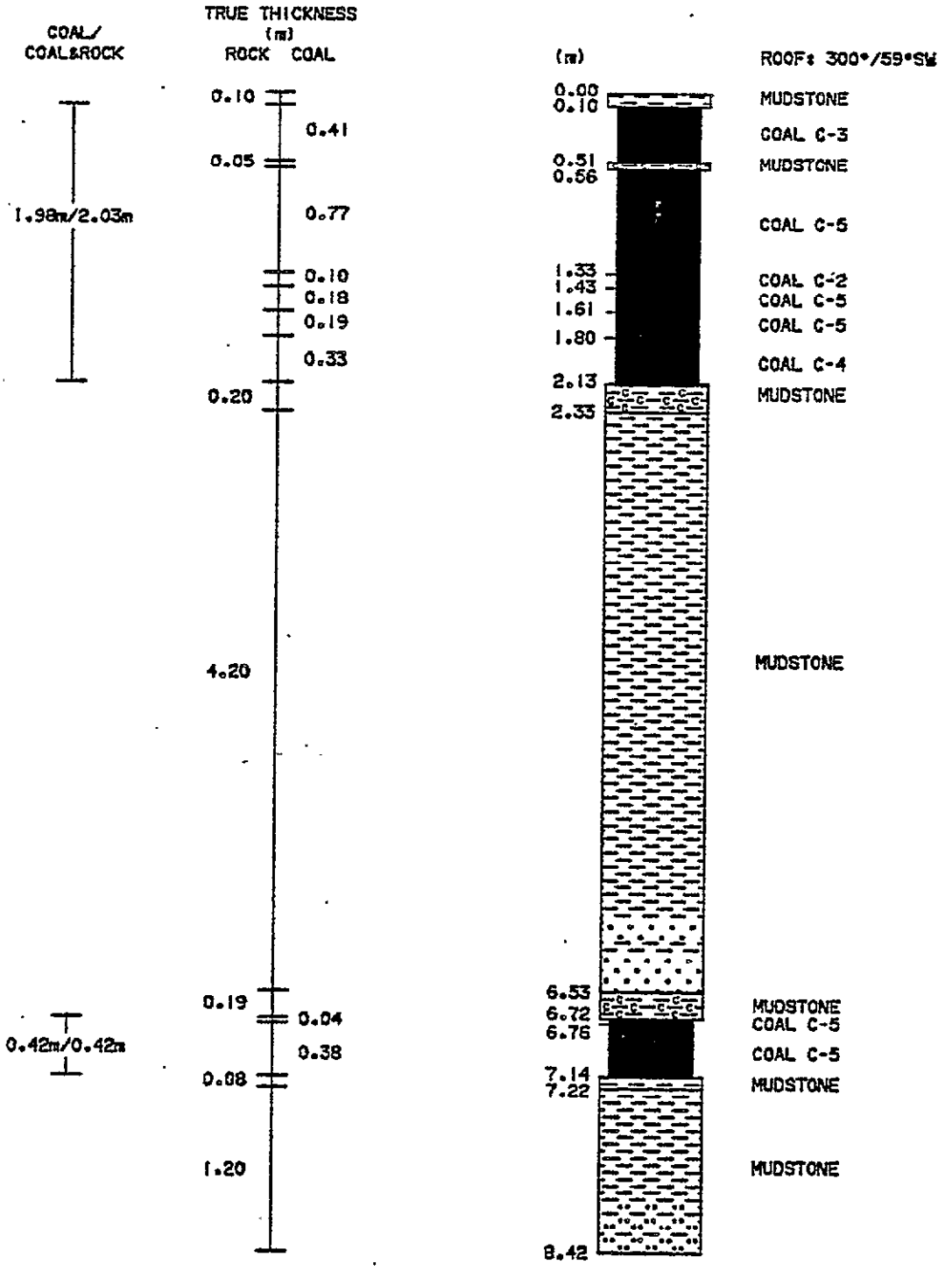
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83023

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.22	0.22			MUDSTONE	CARB.DK.GY BLK AT BASE, RUBBLY, FE STRGS AT TOP, RUSTY WTHRING AT TOP. ROOF.
	0.22	0.83	0.61			COAL	C-5 CRUMBLY TO PWDRY, DAMP.
	0.83	1.51	0.68			MUDSTONE	SLTY.DK.GY SLTY AT TOP, WTHRS LT GY & RUSTY, HARD, BLKY & RUBBLY IN PLACES.
	1.51	1.56	0.05			MUDSTONE	CARB.BLK PWDR.
	1.56	2.09	0.53			COAL	C-3 ABNT BRIGHT LNS & STRGS, CRUMBLY TO HARD IN PLACES.
	2.09	2.35	0.26			COAL	C-4 MNR BRIGHT STRGS, CRUMBLY TO PWDRY, DAMP.
	2.35	2.45	0.10			MUDSTONE	CARB.BLK ABNT BRIGHT COAL WISPS & STRGS, RUBBLY, CARB PL HASH & DEBRIS.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6165081mN, 546061mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-090
TRENCH DEPTH	:	0.6m
TRENCH WIDTH	:	0.7m
TRENCH LENGTH	:	8.42m
TRENCH BEARING	:	242°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83024

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 15/08/83
APPROVED BY: V. DUFORD	

GDR:[206,57]830986006.LOG

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83024

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.GY FE STN, SLIGHTLY CARB, FIS. ROOF.
	0.10	0.51	0.41			COAL	C-3 SHINY, BREAKS INTO SMALL FRAGS, OCC STR GS OF HARD COAL.
	0.51	0.56	0.05			MUDSTONE	CARB V CARB, FE STN.
	0.56	1.33	0.77			COAL	C-5 CHUNKY, DULL, SHRD, SOME STRGS OF BRIGH T SEMI HARD COAL IN TOP 4CM.
	1.33	1.43	0.10			COAL	C-2 HARD, SHINY, BLKY, STRGS OF PWRD DULL C OAL.
	1.43	1.61	0.18			COAL	C-5 SHRD, DULL, SEMIHARD.
	1.61	1.80	0.19			COAL	C-5 PWRD, DULL.
	1.80	2.13	0.33			COAL	C-4 BLKY, BREAKS INTO CLEATS.
	2.13	2.33	0.20			MUDSTONE	CARB.M.GY ABNT FE STN ALONG B/P. FLOOR.

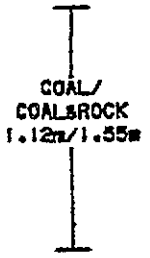
* DENOTES MEASURED BCA

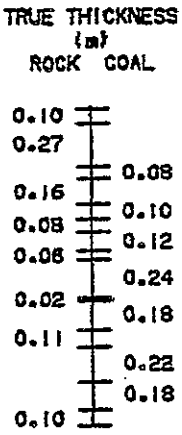
XXXXX

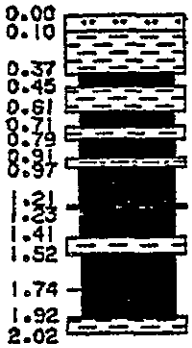
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83024

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.33	6.53	4.20			MUDSTONE	DK.GY WTHRD RED-BN, GRADING TO A FGR SS.
	6.53	6.72	0.19			MUDSTONE	CARB.M.GY ABNT PL FRAGS, FE STN ON BDG. ROOF.
	6.72	6.76	0.04			COAL	C-5 PWRD. SOFT.
	6.76	7.14	0.38			COAL	C-5 HARD. SHRD.
	7.14	7.22	0.08			MUDSTONE	M.GY FE STN, ABNT C-1 COAL STRGS.
	7.22	8.42	1.20			MUDSTONE	M.GY.THNB WTHRD ORNG, ABNT PL FRAGS (GRASS BLADES), GRADES INTO A SLTST. FLOOR.

* DENOTES MEASURED BCA







ROOF: 341°/84°SW

SILTSTONE
MUDSTONE
COAL C-5
MUDSTONE
COAL
MUDSTONE
COAL
MUDSTONE
COAL
MUDSTONE
COAL
MUDSTONE
COAL
COAL
MUDSTONE

FLOOR: 322°/78°SW

FORMATION	:	GETHING
UTM COORDINATES	:	6163465mN, 543954mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-090
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	2.02m
TRENCH BEARING	:	268°
TRENCH SLOPE	:	11°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83026

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 06/07/83
APPROVED BY: V. DUFORD	

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83026

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			SILTSTONE	LT.GY PL FRAGS, BLKY, CALCT VEINS. ROOF.
	0.10	0.37	0.27			MUDSTONE	M.GY HIGHLY FIS, MNR FE STN. ROOF.
	0.37	0.45	0.08			COAL	C-5 SOFT, PWDRY.
	0.45	0.61	0.16			MUDSTONE	GY FE STN.
	0.61	0.71	0.10			COAL	HARD, CRUMBLY.
	0.71	0.79	0.08			MUDSTONE	DK.GY
	0.79	0.91	0.12			COAL	HARD, SHINY, CRUMBLY.
	0.91	0.97	0.06			MUDSTONE	CARB ALMOST COAL.
	0.97	1.21	0.24			COAL	HARD, CRUMBLY.
	1.21	1.23	0.02			MUDSTONE	CARB
	1.23	1.41	0.18			COAL	SOFT, CRUMBLY.

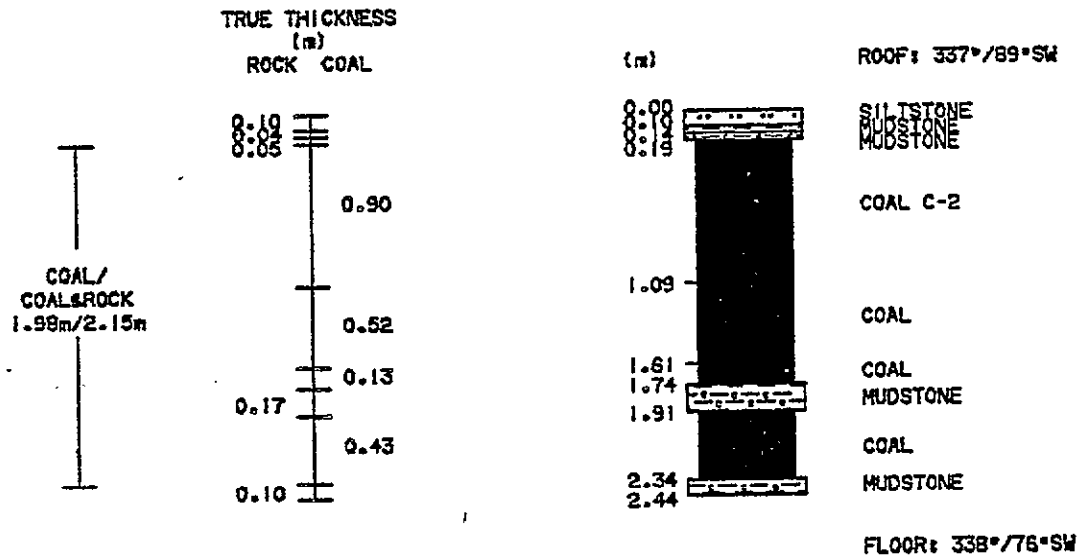
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83026

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.41	1.52	0.11			MUDSTONE	DK GY-BN, LARGE CONC PRESENT, ABNT FE S TN.
	1.52	1.74	0.22			COAL	HARD, BLKY, SHRD, MNR MUDST STRGS.
	1.74	1.92	0.18			COAL	SOFT, PWDRY, SHRD.
	1.92	2.02	0.10			MUDSTONE	PL HASH, CARB BITS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6163480mN, 543954mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-090
TRENCH DEPTH	:	0.3m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	2.44m
TRENCH BEARING	:	355°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83027

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 06/07/83
APPROVED BY: V. DUFORD	

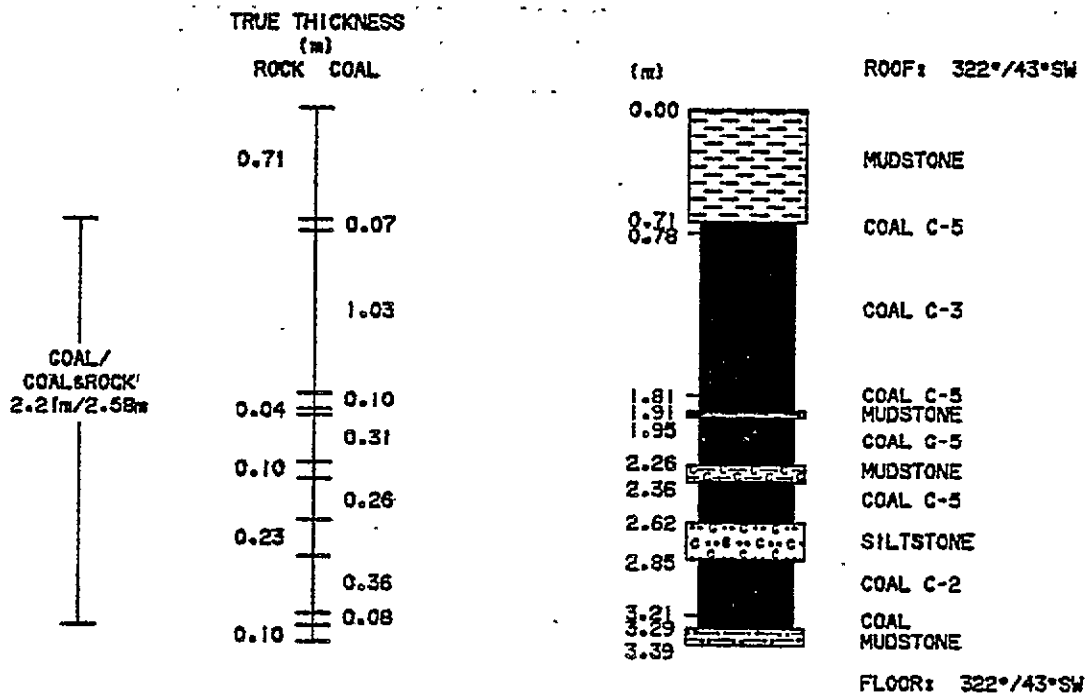
XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83027

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			SILTSTONE	
	0.10	0.14	0.04			MUDSTONE	SLIGHTLY CARB.
	0.14	0.19	0.05			MUDSTONE	CARB
	0.19	1.09	0.90			COAL	C-2 PWDRY, CRUMBLY, OCC HARD CHUNKS.
	1.09	1.61	0.52			COAL	V HARD W OCC CRUMBLY COAL STRGS.
	1.61	1.74	0.13			COAL	PWDRY, CRUMBLY.
	1.74	1.91	0.17			MUDSTONE	CARB MNR FE STN, OCC COAL STRG, ALMOST COAL.
	1.91	2.34	0.43			COAL	HARD, BRIGHT, CHUNKY.
	2.34	2.44	0.10			MUDSTONE	CARB.DK.GY CHANGE OF DIP TOWARDS FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6163394mN, 543690mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC7191-090
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	3.39m
TRENCH BEARING	:	249°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83028

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 06/07/83
APPROVED BY: V. DUFORD	

0801[208,57]830906005.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83028

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.71	0.71			MUDSTONE	DK.GY MNR FE STN, HIGHLY WTHRD. ROOF.
	0.71	0.78	0.07			COAL	C-5 DULL, PWDRY.
	0.78	1.81	1.03			COAL	C-3 V HARD, BLKY, MNR MUDST STRGS.
	1.81	1.91	0.10			COAL	C-5 SOFT, PWDRY.
	1.91	1.95	0.04			MUDSTONE	CARB.M.GY STRG.
	1.95	2.26	0.31			COAL	C-5 PWDRY, SOME SHINY STRGS.
	2.26	2.36	0.10			MUDSTONE	CARB.M.GY STRG.
	2.36	2.62	0.26			COAL	C-5 SOME SHINY STRGS.
	2.62	2.85	0.23			SILTSTONE	CARB.BN HIGHLY DEFORMED, 0.05M COAL STRG THROUG H SLTST.

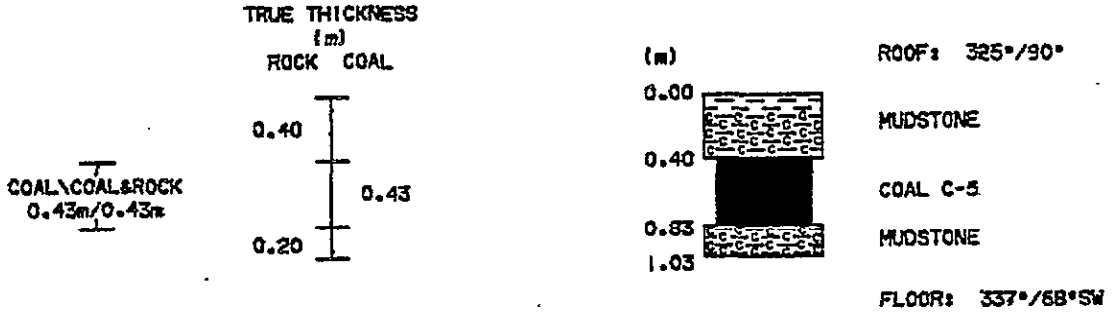
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83028

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.85	3.21	0.36			COAL	C-2 CRUMBLY, HARD, SHINY.
	3.21	3.29	0.08			COAL	SOFT, PWDRY, SOME SHINY STRGS.
	3.29	3.39	0.10			MUDSTONE	SLTY.M.GY ABNT PL FRAGS, FE STN. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6175277mN, 540885mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.50m
TRENCH BEARING	:	240°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83029

DRAWN BY: C. GOODINGS	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 05/07/83
APPROVED BY: V. DUFORD	

D80:[206,57]830986005.LOG

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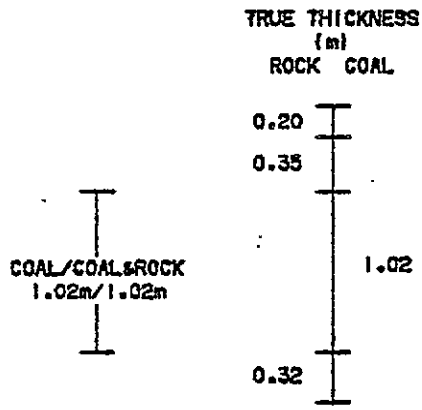
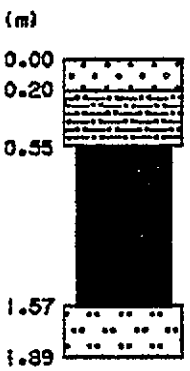
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83029

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.40	0.40			MUDSTONE	CARB.DK.GY ABNT PL FOS, BECOMES V COALY AT BASE, P LATEY TO RUBBLY, OVBN HAS MOVED IT SOME WHAT, MAYBE SLUMPED. ROOF.
	0.40	0.83	0.43			COAL	C-5 WET, PWDR.
	0.83	1.03	0.20			MUDSTONE	CARB.DK.GY ABNT COALY & CARB PL IMPRESSIONS & STRG S, RUBBLY. FLOOR.

* DENOTES MEASURED BCA





ROOF: 341°/41°NE

SANDSTONE

MUDSTONE

COAL C-2

SILTSTONE

FLOOR: 335°/71°NE

FORMATION	:	DRESSER
UTM COORDINATES	:	6167760mN, 537300mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	0.3m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.89m
TRENCH BEARING	:	225°
TRENCH SLOPE	:	32°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83030

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 09/07/83
APPROVED BY: V. DUFORD	

090:1205,5718309860061.L08

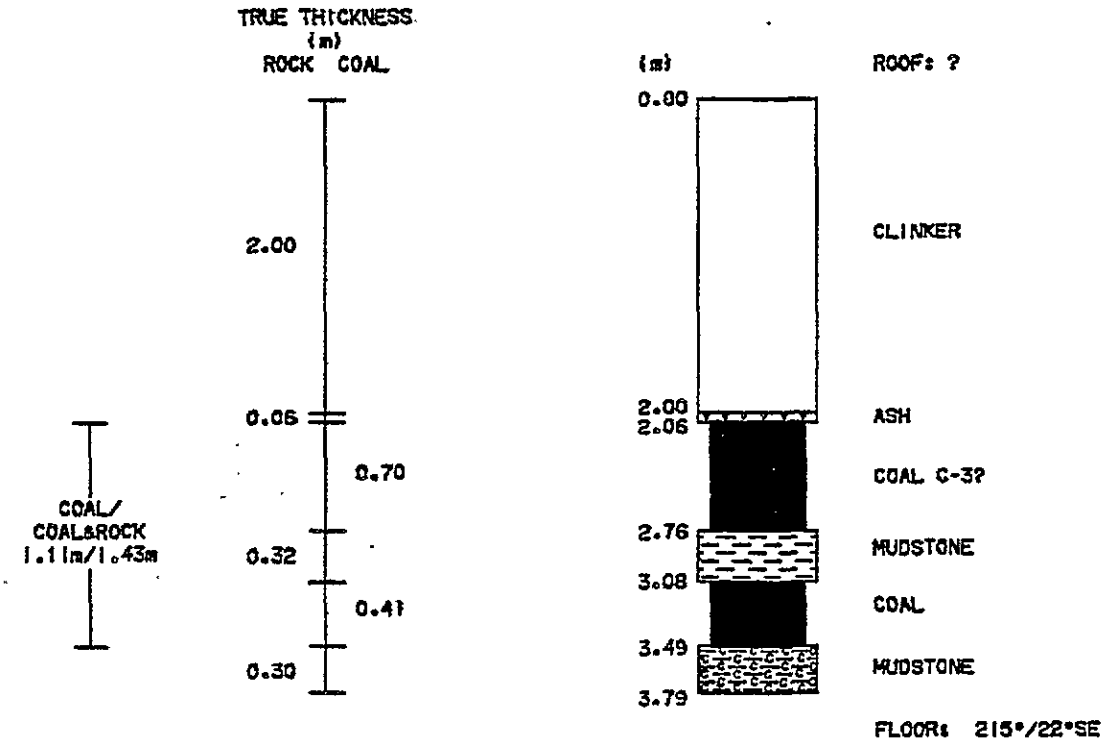
XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83030

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.20	0.20			SANDSTONE	SLTY.VFG BLKY, IRREGULAR FRAC, MNR FE STN. ROOF. NOTE; ROOF LIKELY SLUMPED.
	0.20	0.55	0.35			MUDSTONE	SLTY.RTB CARB AT BASE.
	0.55	1.57	1.02			COAL	C-2.PWRD HARD, V. CLEAN & LIGHT, MORE PWDRY IN BA SAL HALF.
	1.57	1.89	0.32			SILTSTONE	MAS MUDDY, MNR PL DEBRIS, GY BN, REGULAR FR AC. FLOOR. FLOOR UNDERLAIN BY MUDST.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6168165mN, 538489mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	0.3m
TRENCH WIDTH	:	0.3m
TRENCH LENGTH	:	3.79m
TRENCH BEARING	:	185°
TRENCH SLOPE	:	50°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83031

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 09/07/83
APPROVED BY: V. DUFORD	

GDR:[EGS,5718309585008.LOG

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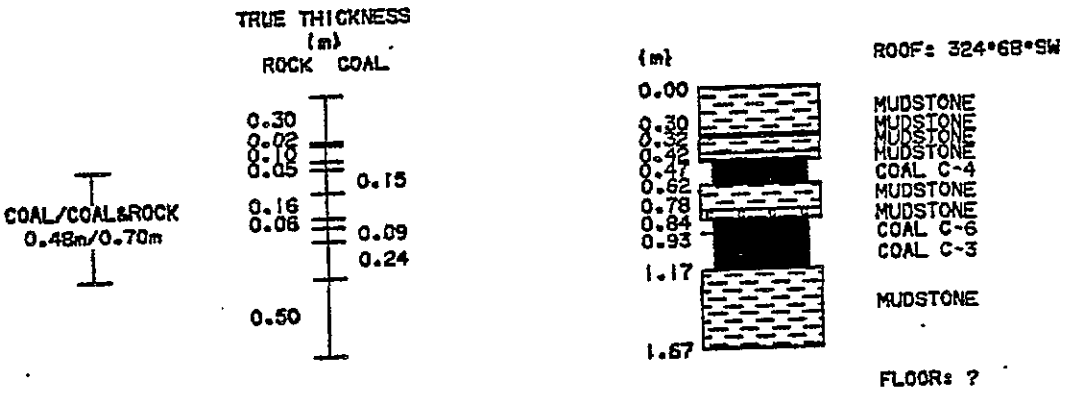
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83031

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	2.00	2.00			CLINKER.	SAMPLE TAKEN.
	2.00	2.06	0.06			ASH??	LT.BN IRREGULAR CTC W COAL.
	2.06	2.76	0.70			COAL	C-3 C-3?, PWDRY AT TOP.
	2.76	3.08	0.32			MUDSTONE	DK.GY HIGHLY FRAC, MNR COAL LAM, OCC SUBCONCH OIDAL FRAC DUE TO HEAT?
	3.08	3.49	0.41			COAL	1.00CM ROCK SPLIT IN MIDDLE.
	3.49	3.79	0.30			MUDSTONE	CARB.DK.GY COALY WISPS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6169500mN, 543850mE
MAP CARD NUMBER	:	930 9WK-2
AIR PHOTO NUMBER:		BC 7190 163
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	1.70m
TRENCH BEARING	:	234°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83032

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: B. CARPENTER	DATE: 11/07/83
APPROVED BY: V. DUFORD	

6501(205,5716505660061.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83032

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			MUDSTONE	M.BN.THNB WTHRD DK BN, CARB PL FRAGS, MNR FE STN, FLAKEY. ROOF.
	0.30	0.32	0.02			MUDSTONE	CARB.DK.GY.LAM CARB TO COALY, FLAKEY, DK GY TO BLK, V SOFT, PART OF ROOF.
	0.32	0.42	0.10			MUDSTONE	EXTREMELY WTHRD, BRIGHT ORNG TO RUST BN , OCC CLAYEY ZONES, FRAC. PART OF ROOF.
	0.42	0.47	0.05			MUDSTONE	DK.BN DK BN TO GY, SOFT, FLAKEY, GRADING CARB DOWNWARDS.
	0.47	0.62	0.15			COAL	C-4 EXTREMELY WTHRD, SOFT, FLAKEY.
	0.62	0.78	0.16			MUDSTONE	DK.GY.MAS LENTICULAR FRAC, WTHRD RUST BN, FE STN, DK GY TO BLK, MODERATELY SOFT.
	0.78	0.84	0.06			MUDSTONE	CARB.DK.BN CARB TO COALY, SOFT, FLAGGY, DK BN TO BLK.
	0.84	0.93	0.09			COAL	C-6 EXTREMELY WTHRD, V WET, SOFT, PWDRY, MNR THIN MUDST PTGS.

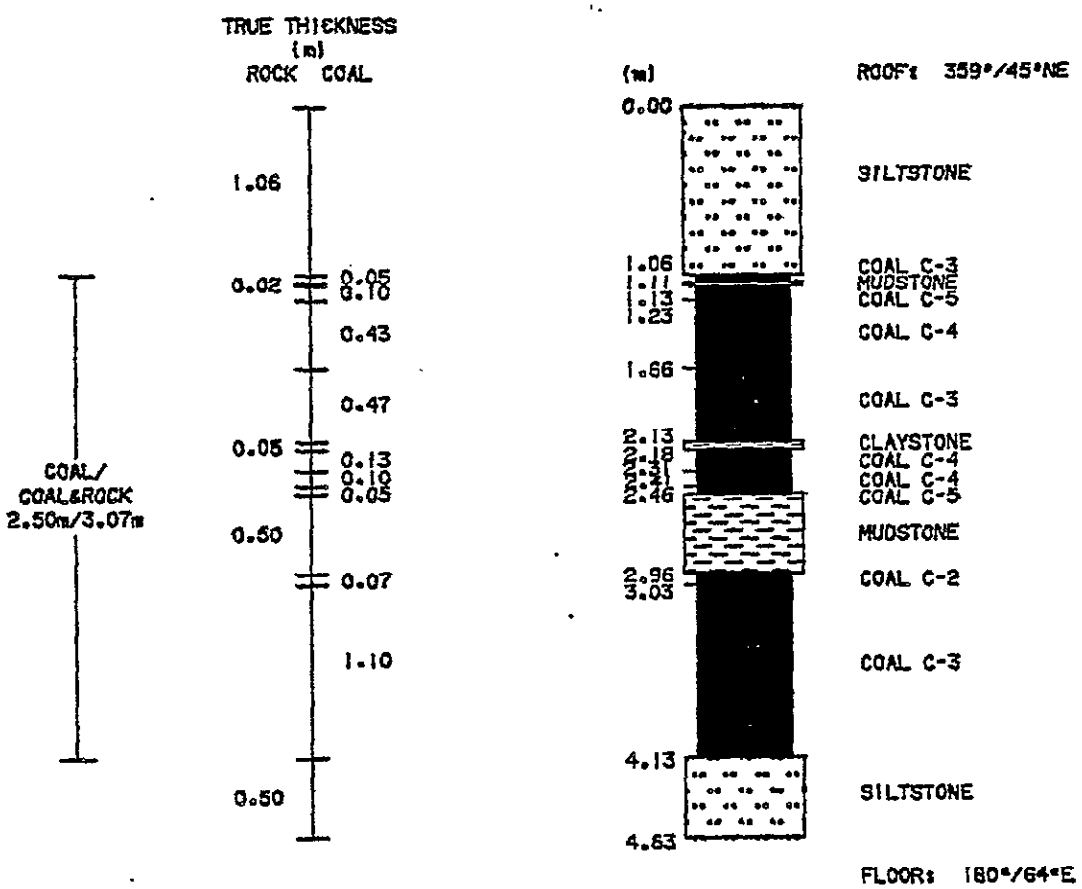
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83032

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.93	1.17	0.24			COAL	C-3 SOFT, PWDR, OCC THIN HARD BANDS, EXTREMELY WET.
	1.17	1.67	0.50			MUDSTONE	DK.GY WTHRD DK GY, IRREGULAR FRAC, SOFT. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6169510mN, 543940mE
MAP CARD NUMBER	:	930 9WK-2
AIR PHOTO NUMBER	:	BC 7190-163
TRENCH DEPTH	:	0.7m
TRENCH WIDTH	:	0.3m
TRENCH LENGTH	:	5.00m
TRENCH BEARING	:	270°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83033

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: B. CARPENTER	DATE: 11/07/83
APPROVED BY: V. DUFORD	

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83033

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.06	1.06			SILTSTONE	M.BN.THNB WTHRD M BN, MNR CARB LAM, CARB PL FRAGS , MNR FE STN, V SHARP CTC W COAL. ROOF.
	1.06	1.11	0.05			COAL	C-3 SOFT, PWDRY.
	1.11	1.13	0.02			MUDSTONE	CARB.DK.BN DK BN TO BLK, FLAKEY.
	1.13	1.23	0.10			COAL	C-5 V MNR MUDST PTGS, SEMIHARD, FLAKEY, IRR EGULAR FRAC.
	1.23	1.66	0.43			COAL	C-4 SEMI HARD, FLAKEY TO BLKY.
	1.66	2.13	0.47			COAL	C-3 HARD, BLKY.
	2.13	2.18	0.05			CLAYSTONE	SOFT, BLKY, WTHRD RUST BN, LIMONITIC.
	2.18	2.31	0.13			COAL	C-4 V HARD, MAS, DULL LUSTER.
	2.31	2.41	0.10			COAL	C-4 ABNT FE STN, MODERATELY WTHRD, OCC THIN LIMONITIC STN, SLTST PTGS.

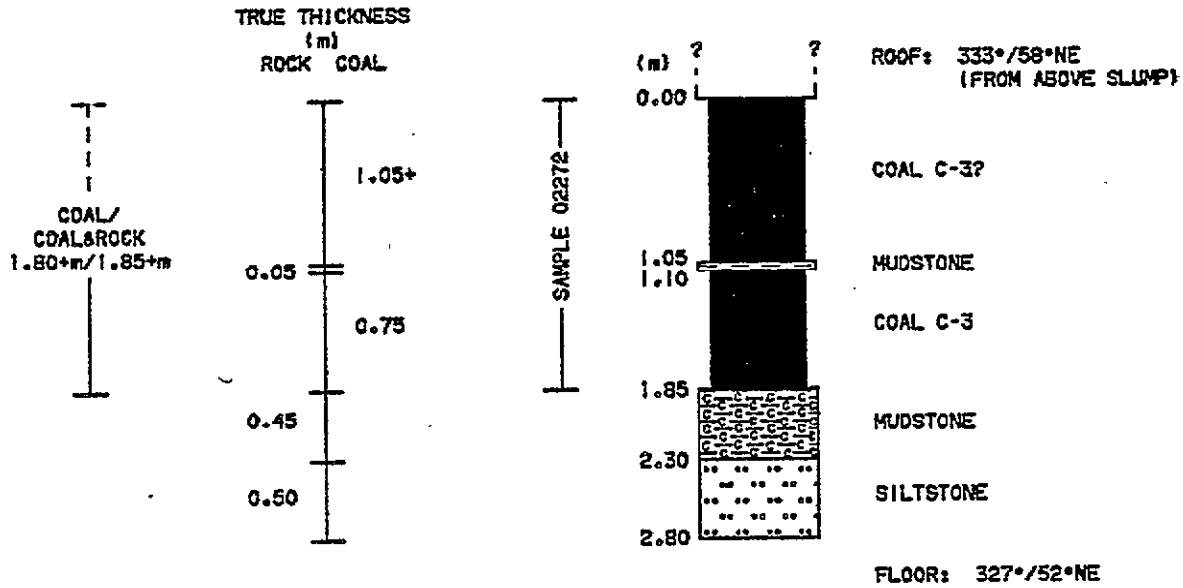
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83033

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.41	2.46	0.05			COAL	C-5 HARD, CONCHOIDAL FRAC.
	2.46	2.96	0.50			MUDSTONE	LT.GY.MAS WTHRD LT BN, SEMI HARD, IRREGULAR FRAC, OCC LIMON ITIC STN BANDS.
	2.96	3.03	0.07			COAL	C-2 BLKY, FRIABLE.
	3.03	4.13	1.10			COAL	C-3 V HARD, PROM CLEAVAGE.
	4.13	4.63	0.50			SILTSTONE	DK.BN WTHRD DK BN, GRADES TO A FG SS (WTHRD RED BN), ABNT SMALL SCALE XBDG. FLOOR.

* DENOTES MEASURED BCA



UPPER COAL CONTACT NOT FOUND. ROOF OF SEAM IS SLUMPED. COAL COULD BE AS THICK AS 2.50m.

FORMATION	:	GETHING
UTM COORDINATES	:	6169350mN, 537580mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	3.00m
TRENCH BEARING	:	230°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83034

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 12/07/83
APPROVED BY: V. DUFORD	

GDR:1206,671830966006.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

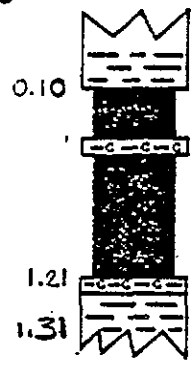
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83034

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.05	1.05	02272		COAL	C-3 UPPER COAL CTC NOT FOUND. ROOF OF SEAM IS SLUMPED.
	1.05	1.10	0.05	02272		MUDSTONE	GY SOFT.
	1.10	1.85	0.75	02272		COAL	C-3
	1.85	2.30	0.45			MUDSTONE	CARB MNR COALY STRGS. PART OF FLOOR.
	2.30	2.80	0.50			SILTSTONE	WTHRS DK ORNG BN, ABNT FE STN PL FRAGS. FLOOR.

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
1.02/1.11m

TRUE THICKNESS	
ROCK	COAL
0.10	
	0.29m
0.09	
	0.13m
	0.30m
	0.07m
	0.23m
0.10	



ROOF: 328°/65°N.E.

MUDSTONE: dark grey, broken, well weathered

COAL: blocky, dull weathered

MUDSTONE: carbonaceous, dark grey, very broken

COAL: soft, fissile, somewhat bright

COAL: soft, dull, few bright bands

COAL: soft, dull, powdered, abundant fine red streaks, mudstone pieces

COAL: soft, powdered, dull

MUDSTONE: carbonaceous, few coaly inclusions

MUDSTONE: brown, weathered very well

FLOOR: 328°/65°N.E.

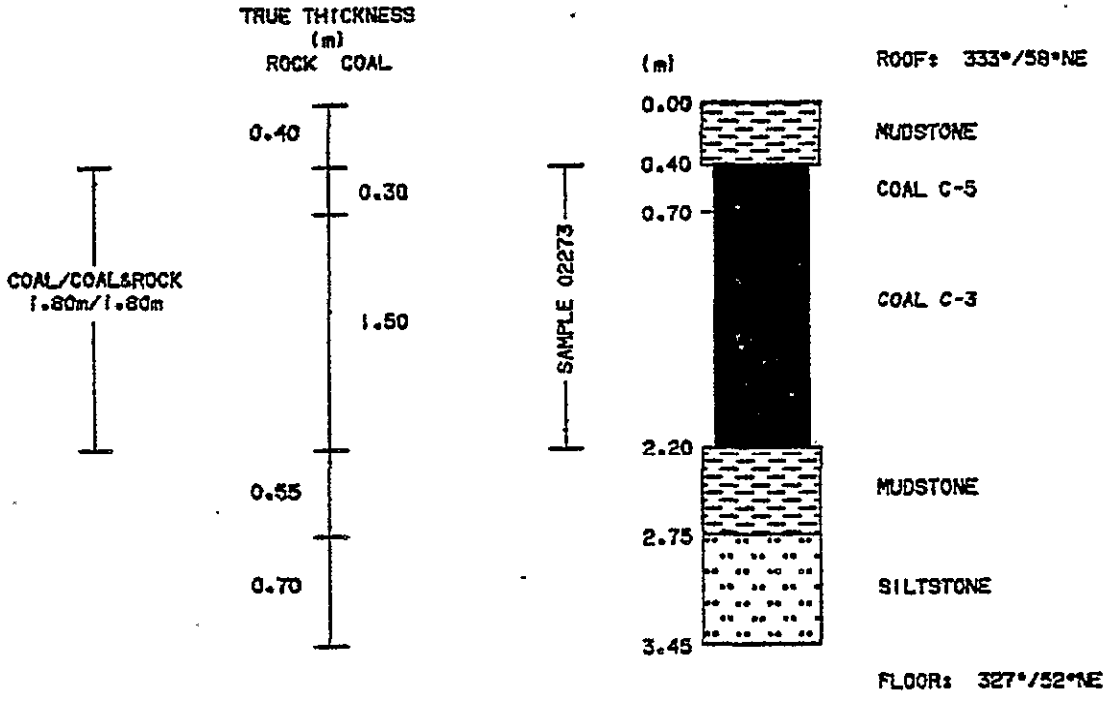
FORMATION :GETHING
UTM COORDINATES :170 700 N, 538 740 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH :0.20 m
TRENCH WIDTH :0.31 m
TRENCH LENGTH :1.31 m
TRENCH BEARING :238°
TRENCH SLOPE :0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

MB - 81 - 11

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: S. DAVIDSON DATE OCT./81
APPROVED BY: H. ZSCHACH



FORMATION	:	GETHING
UTM COORDINATES	:	6169520mN, 537730mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	3.50m
TRENCH BEARING	:	245°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83035

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 12/07/03
APPROVED BY: Y. DUFORD	

GDR:1205,6719305S6006.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83035

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.40	0.40			MUDSTONE	LAM GY/BN, IRREGULAR FRAC, HIGHLY FRAC AT C OAL. ROOF.
	0.40	0.70	0.30	02273		COAL	C-5
	0.70	2.20	1.50	02273		COAL	C-3
	2.20	2.75	0.55			MUDSTONE	BLK IRREGULAR FRAC RESEMBLING SILICIOUS.
	2.75	3.45	0.70			SILTSTONE	MUDDY, WTHRD ORNG BN, SOFT, FAINT LAM. FLOOR.

* DENOTES MEASURED BCA

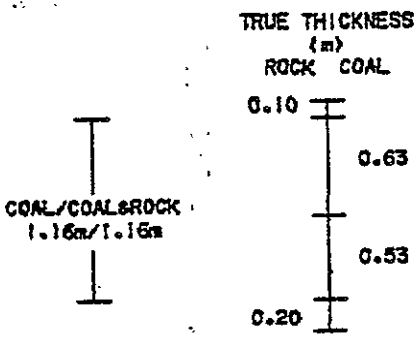
GULF CANADA RESOURCES INC. - COAL DIVISION

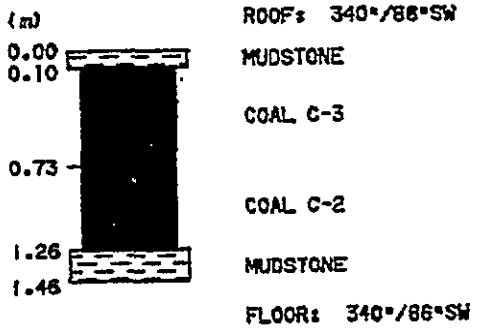
29/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

TRUE THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC83035										
		2273	0.40	2.20	100.00	1.800				1.80- 0.00





FORMATION	:	GETHING
UTM COORDINATES	:	6175209mN, 541820mE
MAP CARD NUMBER	:	930/9WK-11
AIR PHOTO NUMBER	:	BC-7183-240
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	1.0m
TRENCH LENGTH	:	1.46m
TRENCH BEARING	:	196°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83036

DRAWN BY: G. GOODINOB	SCALE: 1:50
LOGGED BY: D. LANCSTER	DATE: 10/07/83
APPROVED BY: Y. DUFORD	

G301E205,5718309N6007.LOG

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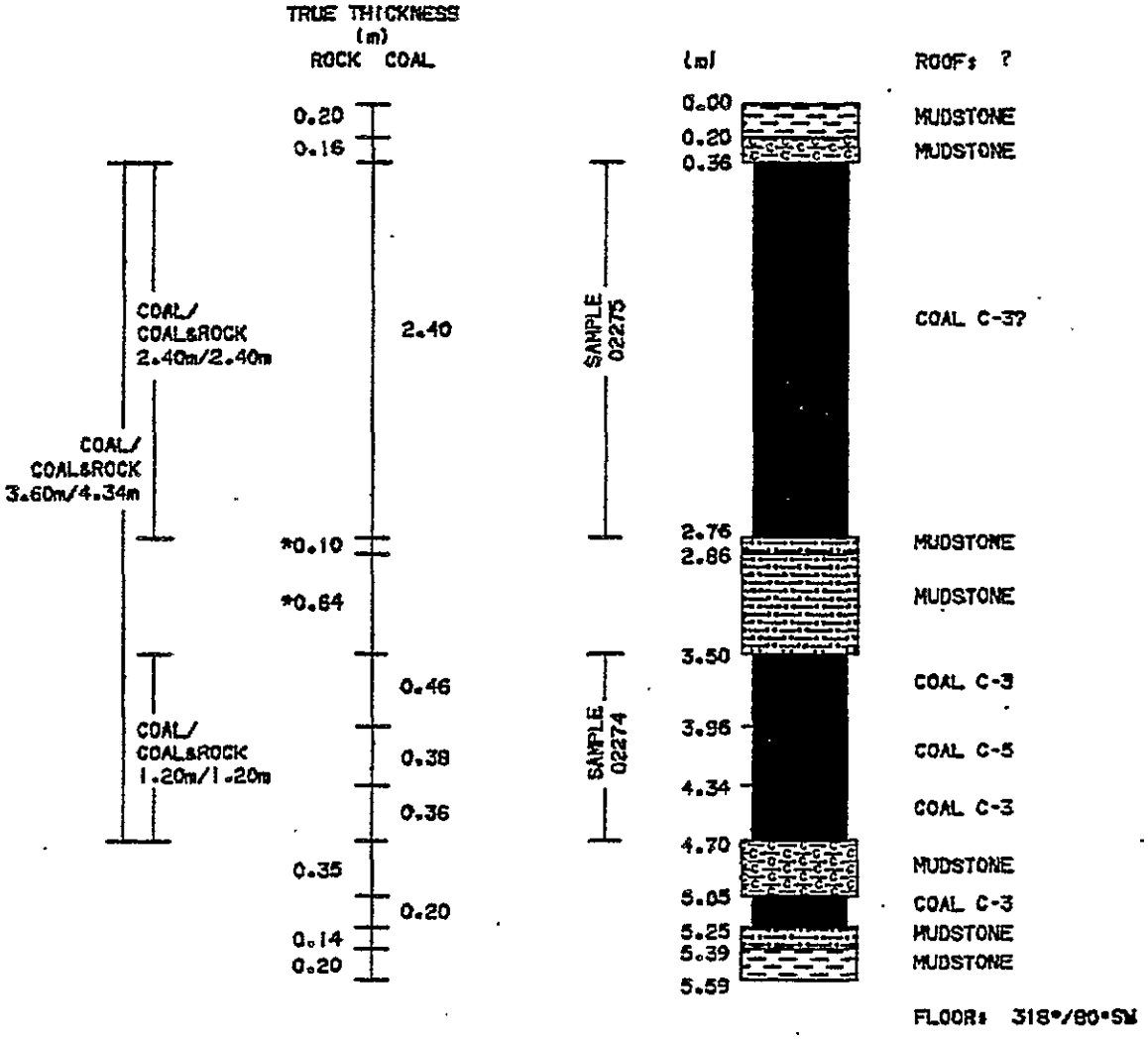
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83036

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	M.BN CARB PL FRAGS. ROOF.
	0.10	0.73	0.63			COAL	C-3
	0.73	1.26	0.53			COAL	C-2
	1.26	1.46	0.20			MUDSTONE	DK.GY CARB PL FRAGS. FLOOR.

* DENOTES MEASURED BCA



*SLUMPED: THICKNESSES ARE ESTIMATES.

FORMATION	:	GETHING
UTM COORDINATES	:	6169720mN, 537980mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	5.60m
TRENCH BEARING	:	255°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83037

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 13/07/83
APPROVED BY: Y. DUFORD	

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83037

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.20	0.20			MUDSTONE	DK.GY.MAS ROOF. SLUMPED.
	0.20	0.36	0.16			MUDSTONE	CARB.BLK COAL STRGS, HIGHLY FRAC.
	0.36	2.76	2.40	02275		COAL	C-3 C-3?, THICKENED?.
	2.76	2.86	0.10			MUDSTONE	SLTY.M.GY V HARD.
	2.86	3.50	0.64			MUDSTONE	SLTY.M.GY WTHRS GY/BN.
	3.50	3.96	0.46	02274		COAL	C-3 SOFT.
	3.96	4.34	0.38	02274		COAL	C-5 FE STN, IRREGULAR FRAC, HARD.
	4.34	4.70	0.36	02274		COAL	C-3
	4.70	5.05	0.35			MUDSTONE	CARB.DK.GY COAL STRGS.
	5.05	5.25	0.20			COAL	C-3 SOFT.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83037

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	5.25	5.39	0.14			MUDSTONE	SLTY.BN LISTRIC SURF. PART OF FLOOR.
	5.39	5.59	0.20			MUDSTONE	CLYY GY/BN, V SOFT, ORNG & RED FE STN, MNR C OAL BLEBS. FLOOR.

* DENOTES MEASURED BCA

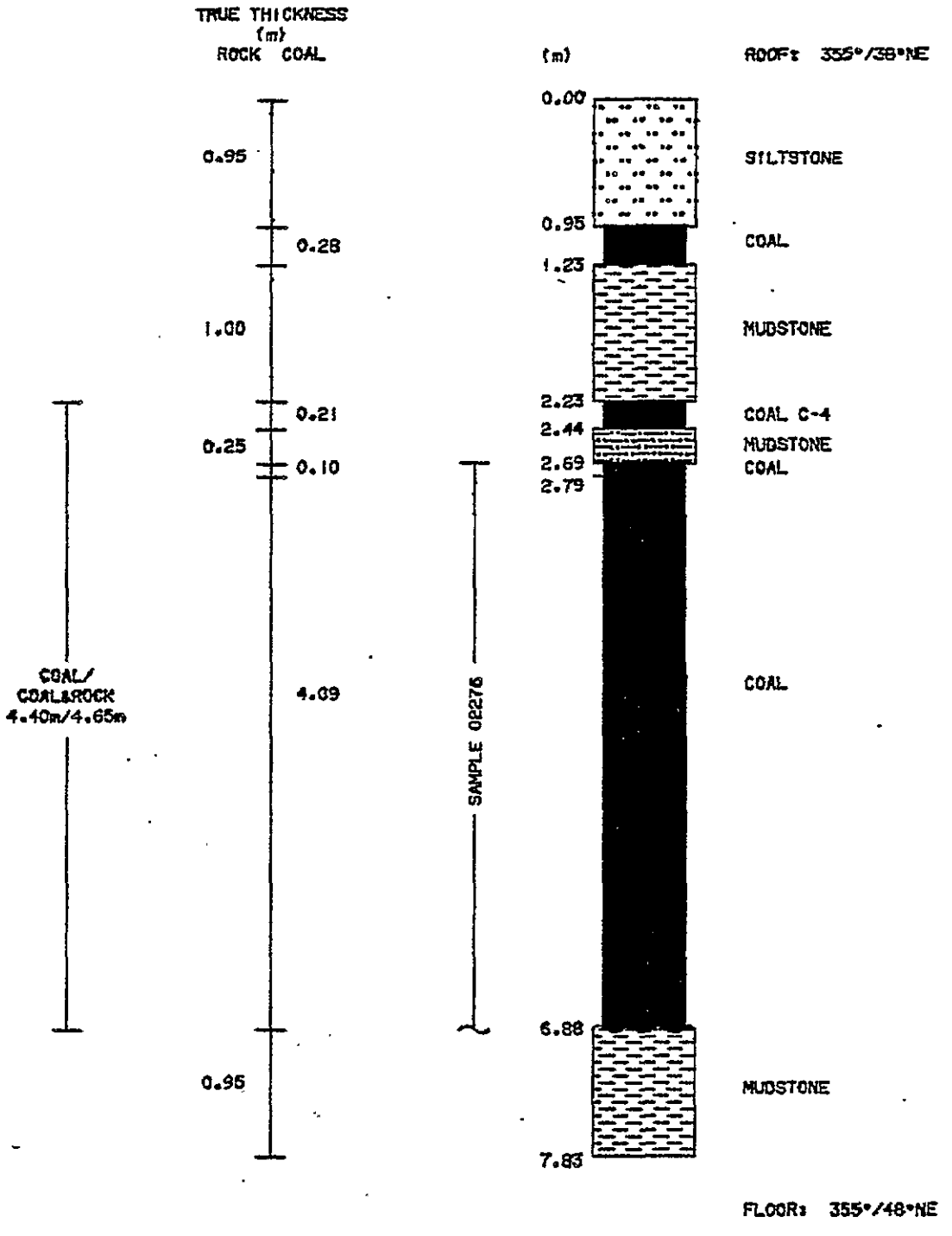
GULF CANADA RESOURCES INC. - COAL DIVISION

29/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

TRUE THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC83037										
		2274	3.50	4.70	100.00	1.200				1.20- 0.00
		2275	0.36	2.76	100.00	2.400				2.40- 0.00



FORMATION	:	GETHING
UTM COORDINATES	:	6169740mN, 538100mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7190-157
TRENCH DEPTH	:	1.2m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	8.00m
TRENCH BEARING	:	305°
TRENCH SLOPE	:	20°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83038

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 13/07/83
APPROVED BY: V. DUFORD	

GDR:1205,5718309860007.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83038

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.95	0.95			SILTSTONE	BLKY, HARD, WTHRS ORNG BN. ROOF.
	0.95	1.23	0.28			COAL	PWDR.
	1.23	2.23	1.00			MUDSTONE	BN CARB AT TOP, SILICIOUS FRAC, SOMEWHAT B LKY.
	2.23	2.44	0.21			COAL	C-4
	2.44	2.69	0.25			MUDSTONE	SLTY.M.GY IRREGULAR FRAC, WTHRS DK ORNG BN.
	2.69	2.79	0.10	02276		COAL	PWDR.
	2.79	6.88	4.09	02276		COAL	HARD, FE STN, WELL CLEATED.
	6.88	7.83	0.95			MUDSTONE	SUB FIS, WTHRS LT ORNG - GY, MULTICOLOR ED LUSTER COMMON ON LISTRIC TYPE SURFAC E, UNDULATORY CTC W COAL. FLOOR.

* DENOTES MEASURED BCA

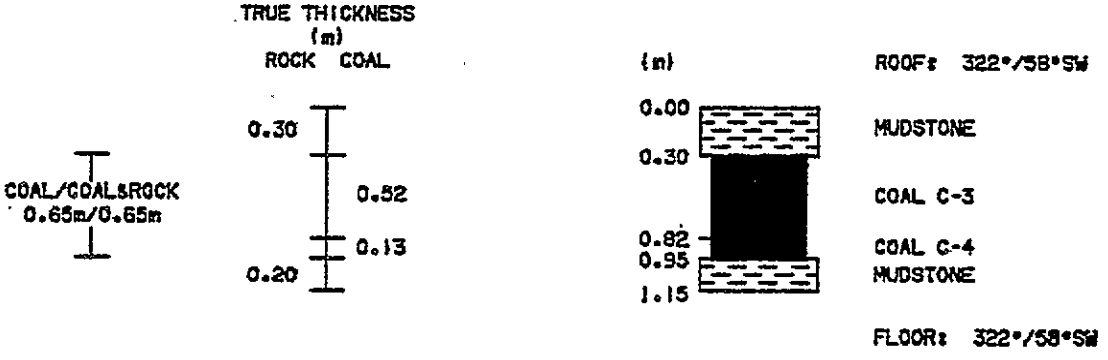
GULF CANADA RESOURCES INC. - COAL DIVISION

29/NOV/83 SIMPLE SAMPLE SUMMARY PAGE 2

TRUE THICKNESS

GOODRICH PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
TRC83038										
		2276	2.69	6.88	100.00	4.190				4.19- 0.00



FORMATION	:	GETHING
UTM COORDINATES	:	6170381mN, 539336mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 81031-010
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	1.0m
TRENCH LENGTH	:	1.15m
TRENCH BEARING	:	230°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83039

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: D. INKSTER	DATE: 13/07/83
APPROVED BY: V. DUFORD	

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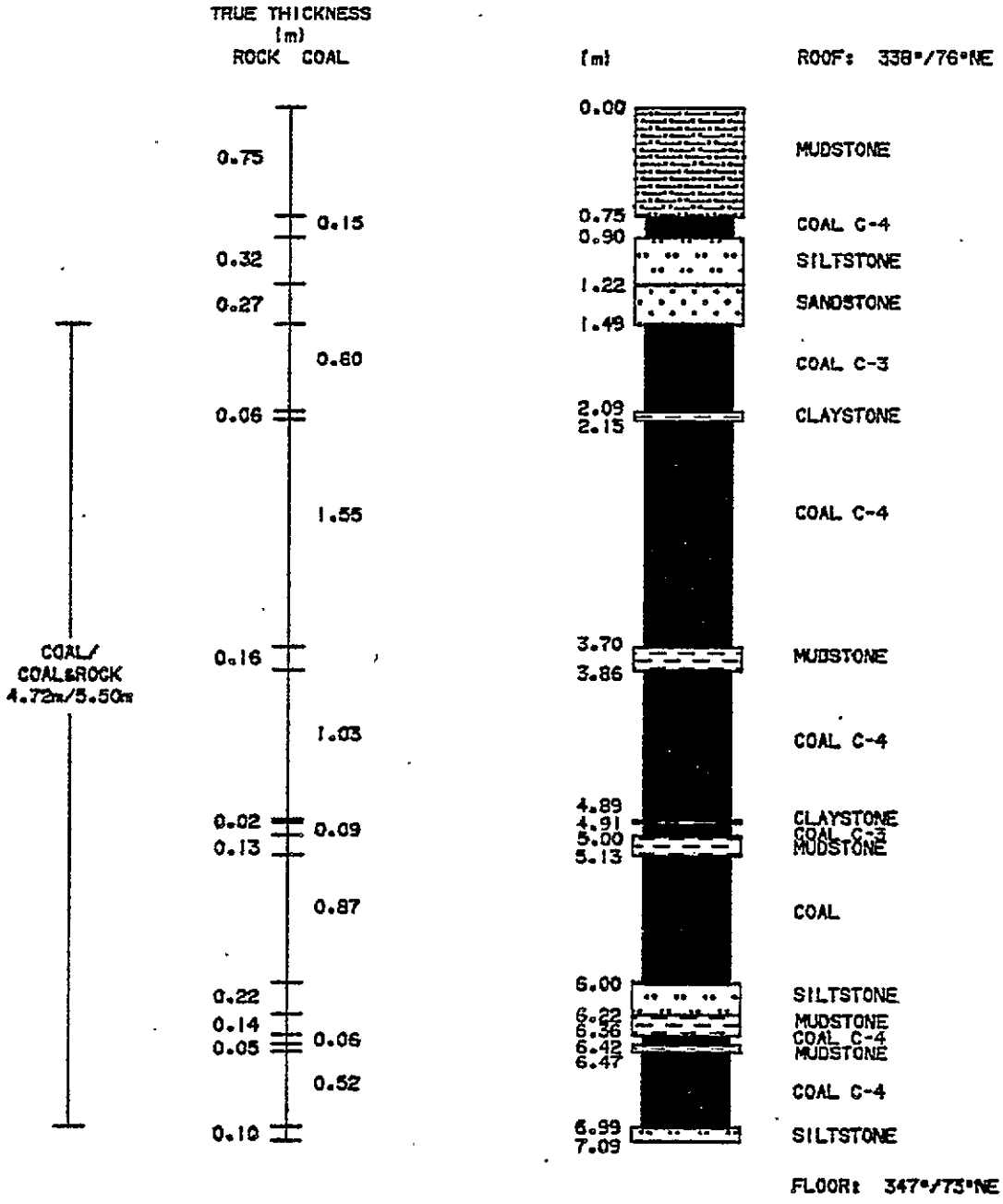
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83039

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			MUDSTONE	M-DK.GY FE STN, CARB PL FRAGS. ROOF.
	0.30	0.82	0.52			COAL	C-3
	0.82	0.95	0.13			COAL	C-4 V SHRD.
	0.95	1.15	0.20			MUDSTONE	DK.GY ABNT FE STN, LOTS OF CARB PL IMPRESSION S (GRASS). FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6166540mN, 545350mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-027
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	7.25m
TRENCH BEARING	:	261°
TRENCH SLOPE	:	10°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83041

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: B. CARPENTER	DATE: 14/07/83
APPROVED BY: V. DUFORD	

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83041

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.75	0.75			MUDSTONE	SLTY.DK.BN.THNB WTHRD BUFF BN, FLAGGY, OCC RUST STN LAM , GRADES INTO SST UPWARDS. ROOF.
	0.75	0.90	0.15			COAL	C-4 SOFT, PWDRY, HIGHLY WTHRD, ABRUPT CTC O N TOP & BOTTOM.
	0.90	1.22	0.32			SILTSTONE	DK.GY.THNB RUBBLY, MOD. SOFT.
	1.22	1.49	0.27			SANDSTONE	FG.DK.BN.MAS WTHRD LT REDDISH BN, V HARD, IRREGULAR FRAC, MNR CARB PL FRAGS, FE STN PL FRAG S.
	1.49	2.09	0.60			COAL	C-3 FLAKEY, OCC HARD BANDS.
	2.09	2.15	0.06			CLAYSTONE	RUBBLY, APPEARS GRANULAR, WTHRD REDDISH BN, HEMATITIC STN.
	2.15	3.70	1.55			COAL	C-4 FLAKEY, HIGHLY WTHRD.
	3.70	3.86	0.16			MUDSTONE	DK.BN.LAM DK GY/BN, FLAKEY, SOFT, MNR COALY INTBD S.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83041

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.86	4.89	1.03			COAL	C-4 FLAKEY, HIGHLY WTHRD.
	4.89	4.91	0.02			CLAYSTONE	SOFT, FLAKEY, WTHRD ORNG BN, LIMONITIC STN.
	4.91	5.00	0.09			COAL	C-3
	5.00	5.13	0.13			MUDSTONE	DK.BN.LAM SOFT, FLAKEY, ABNT COALY STRGS.
	5.13	6.00	0.87			COAL	C-3 MOD HARD, BANDED, FLAKEY.
	6.00	6.22	0.22			SILTSTONE	DK.GY.MAS V HARD, DK BN/GY.
	6.22	6.36	0.14			MUDSTONE	INTBD W COAL, BANDS 2CM.
	6.36	6.42	0.06			COAL	C-4 SOFT, PWDR, HIGHLY WTHRD.
	6.42	6.47	0.05			MUDSTONE	DK.GY DK BN/GY, SOFT, FLAKEY.
	6.47	6.99	0.52			COAL	C-4 SOFT, PWDR, HIGHLY WTHRD.

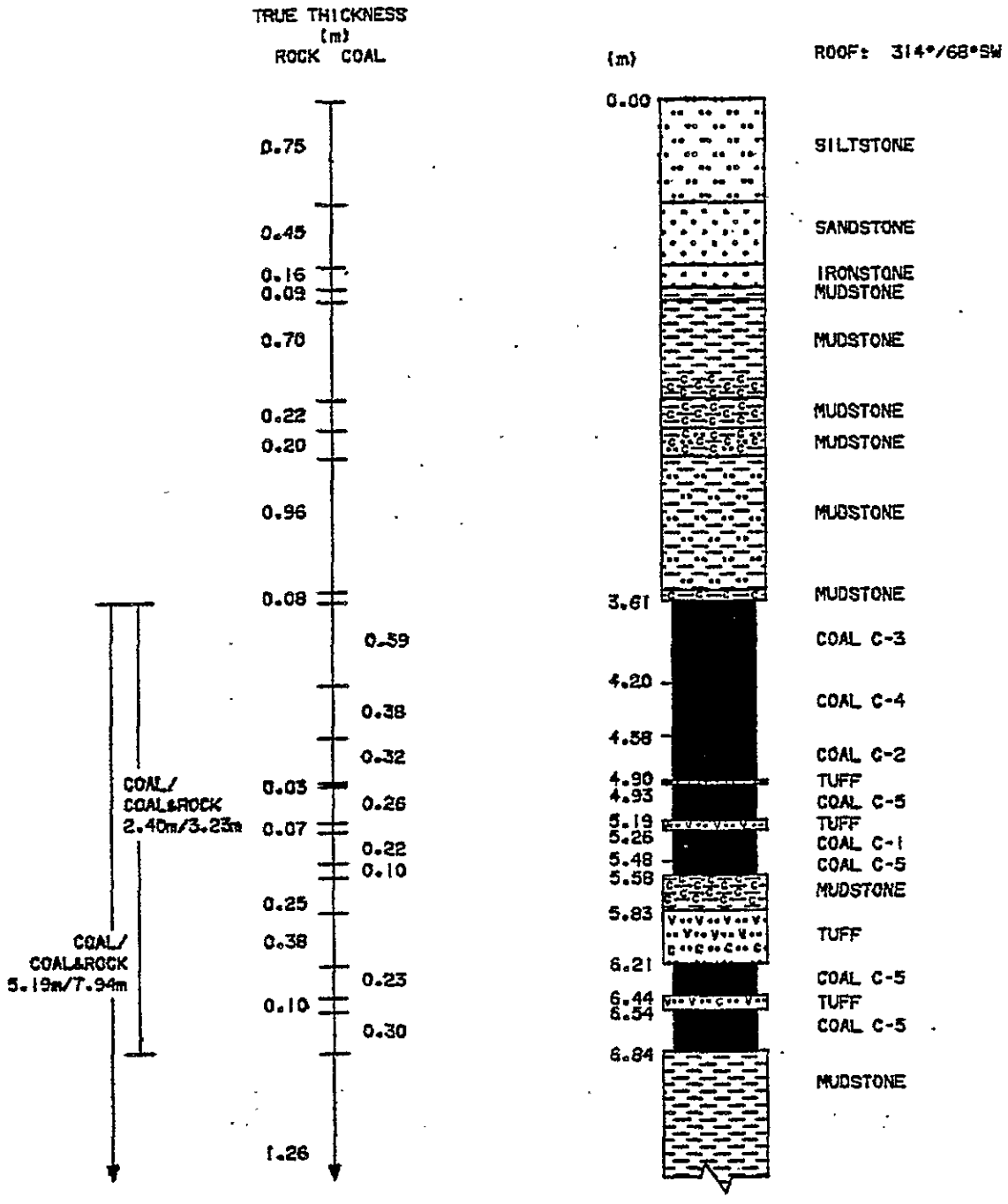
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83041

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	6.99	7.09	0.10			SILTSTONE	DK.GY.MAS OCC CARB PL FRAGS, HARD. FLOOR.

* DENOTES MEASURED BCA

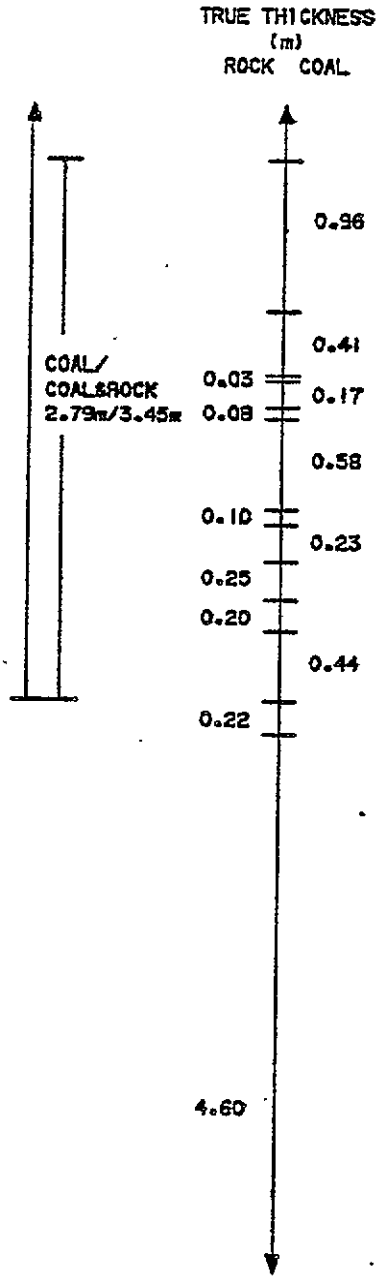


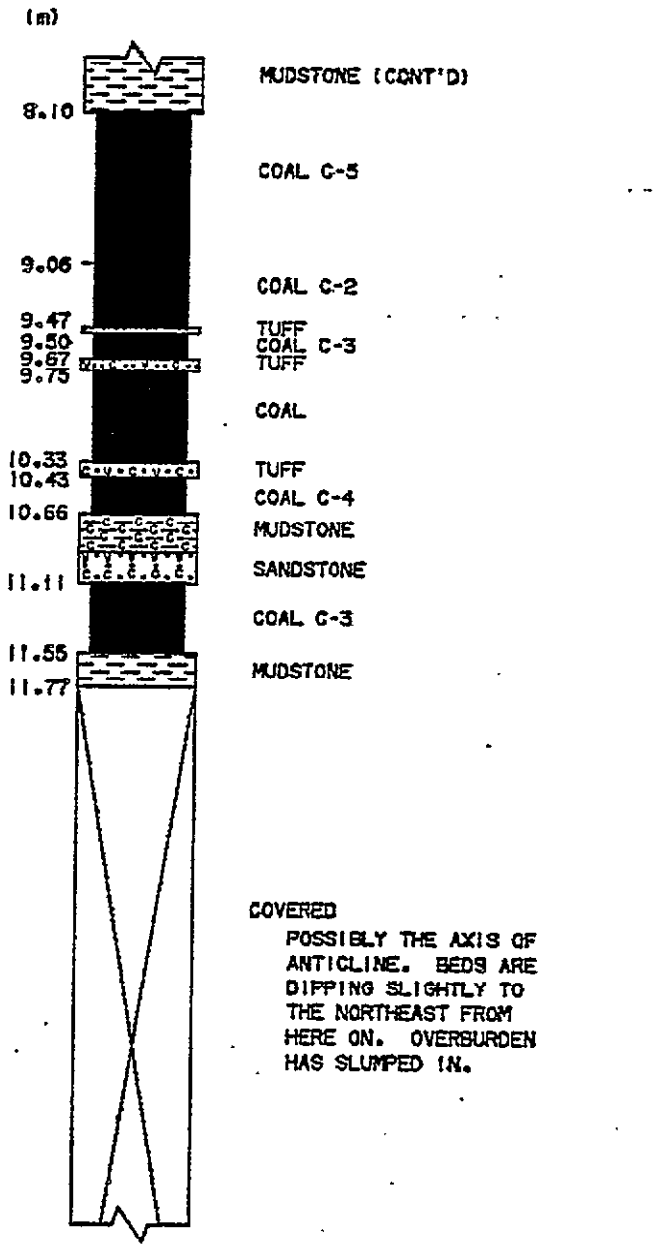
FORMATION	:	GETHING
UTM COORDINATES	:	6167155mN, 540700mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 81031-010
TRENCH DEPTH	:	3.0m
TRENCH WIDTH	:	2.0m
TRENCH LENGTH	:	~~51.0m~~ 36.54m
TRENCH BEARING	:	224°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83042

DRAWN BY: V. DUFORD	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 17/07/83
APPROVED BY: V. DUFORD	PAGE 1 OF 5

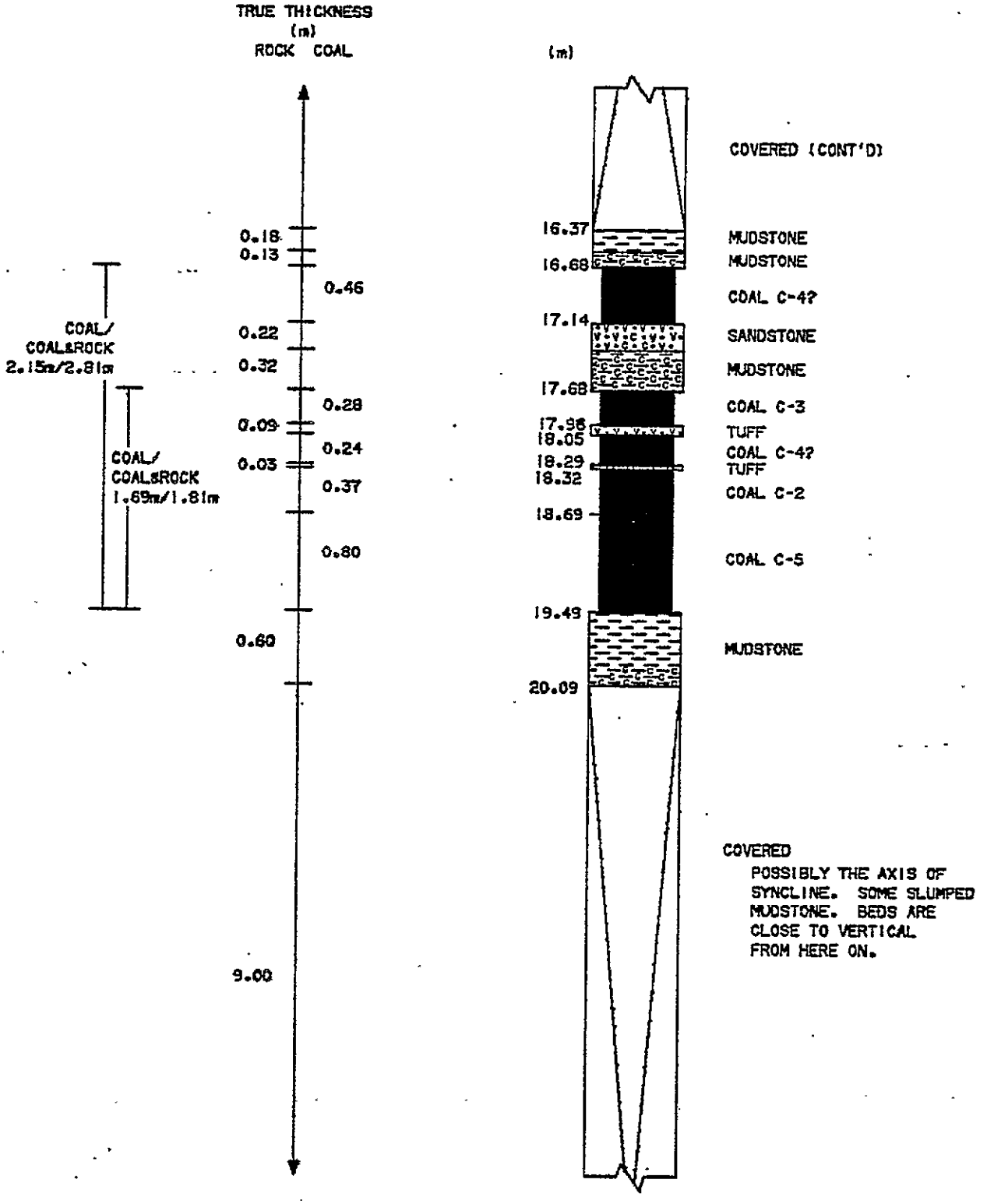




GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83042

DRAWN BY: V. DUFORD	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 17/07/83

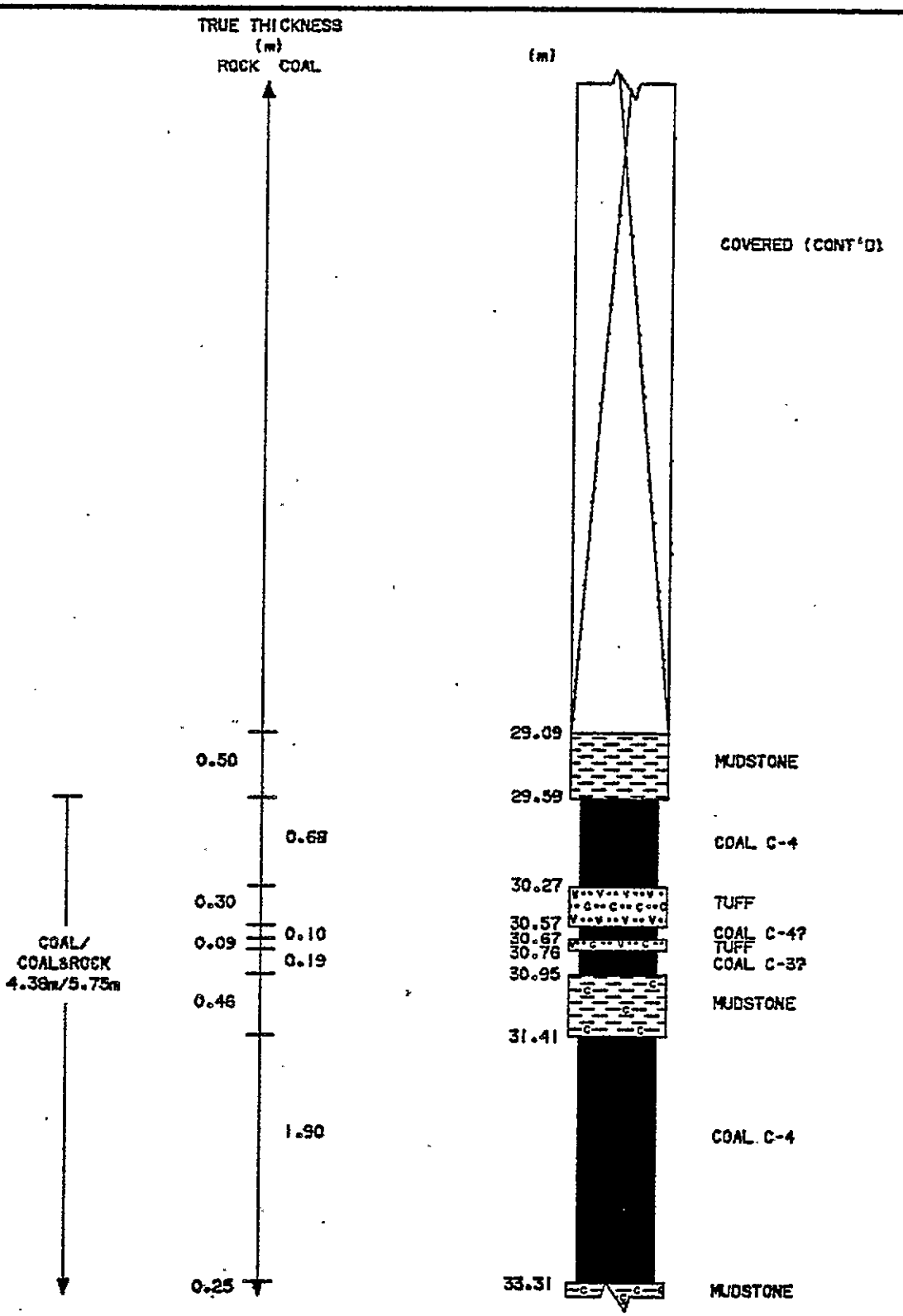


GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83042

DRAWN BY: V. DUFORD	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 17/07/83
APPROVED BY: V. DUFORD	PAGE 3 OF 5

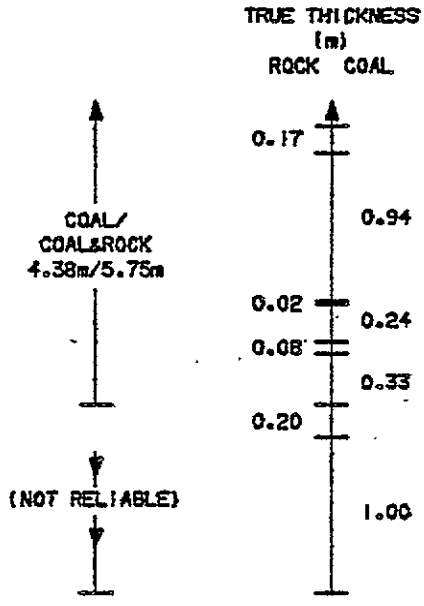
086:1205,5718303&8008.LOG

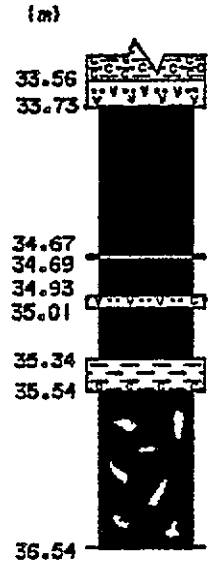


GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83042

DRAWN BY: V. DUFORD	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 17/07/83
APPROVED BY: V. DUFORD	PAGE 4 OF 5





MUDSTONE(CONT'D)
SANDSTONE

COAL C-2?

TUFF
COAL C-3
SANDSTONE
COAL C-2

MUDSTONE

COAL?
SLUMPED, MIXED WITH OVERBURDEN. APPROX. THICKNESS.

END OF TRENCH

FLOOR(?): 316°/90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83042

DRAWN BY: V. DUFORD	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE: 17/07/83
APPROVED BY: V. DUFORD	PAGE 5 OF 5

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.75	0.75			SILTSTONE	M.GY TO BROWNISH ON FRESH SURF, WTHRS BUFF, MNR RUSTY GRASS BLADE FOS, TRACE CARB R OOTLETS, BLKY.
	0.75	1.20	0.45			SANDSTONE	DK.GY.LAM.XBDG WTHRS BUFF W RUSTY LAM, CARB RESIDUE ON FRAC SURF, SSD, SML SCALE XBDG, TOPS U P, TRACE BRIGHT COAL WISPS, BOTTOM SURF IS UNDULATORY & OVERLIES FE ST CONC BD OF VARYING THICKNESS.
	1.20	1.36	0.16			IRONSTONE	CONC BAND OF VARYING THICKNESS.
	1.36	1.45	0.09			MUDSTONE	DK.BN DK BN ON FRESH & WTHRD, RUSTY, RUBBLY.
	1.45	2.15	0.70			MUDSTONE	DK.GY OCC PODS OF PL DEBRIS WHICH ARE FE RICH ; CONC - LIKE CHARACTER (IN FE-BARREN BDS); BECOMES CARB & BLK TOWARDS THE BA SE.
	2.15	2.37	0.22			MUDSTONE	CARB.BLK THIN BRIGHT COAL STRGS THROUGHOUT, CRUM BLY, LOOKS SHRD AT BASE.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.37	2.57	0.20			MUDSTONE	CARB.DK.GY 316/74SW, ABNT BRIGHT COALY WISPS, LOW DENSITY, FRI, SLIGHTLY SLTY.
	2.57	3.53	0.96			MUDSTONE	DK.GY TO DK BN, MNR FE RICH BDS. SLTY BANDS, SPLINTERY, 20CM X 50CM FE CONC, MONOTONOUS.
	3.53	3.61	0.08			MUDSTONE	CARB.BLK BRIGHT COAL WISPS & STRGS, IF THERE WAS PL DEBRIS HAS BEEN MANGLED BY TREE ROOTS.
	3.61	4.20	0.59			COAL	C-3 BRIGHT STRGS <1CM, TRACES FUSAIN, TRACES OF V THN MUDST LAM, BLKY, FRI IN PLACES, UNDULATORY UPPER CTC.
	4.20	4.58	0.38			COAL	C-4 BRIGHT COAL STRGS UP TO 0.5CM THICK, CRUMBLY TO RUBBLY.
	4.58	4.90	0.32			COAL	C-2 CRUMBLY & FRI.
	4.90	4.93	0.03			TUFF	M.BN TUFFACEOUS SLTST, WTHRS M BN.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	4.93	5.19	0.26			COAL	C-5 1 CM BRIGHT COAL STRG BELOW TUFF.
	5.19	5.26	0.07			TUFF	TUFFACEOUS SLTST, ABNT CARB PL REMAINS, FE SPECKS THROUGHOUT, TR BRIGHT COAL W ISPS.
	5.26	5.48	0.22			COAL	C-1 CRUMBLY, 1CM MUDST LNS AT BASE.
	5.48	5.58	0.10			COAL	C-5 CRUMBLY.
	5.58	5.83	0.25			MUDSTONE	CARB.DK.GY TO BN, MIXED W COAL DUE TO SLUMPING, POSSIBLY CLOSE TO NOSE OF ANTICLINE.
	5.83	6.21	0.38			TUFF	TUFFACEOUS SLTST, EXTREMELY RUSTY THROUGHOUT, NO FRESH SURF, CARB DEBRIS, APPEARS IT HAS ALSO BEEN AFFECTED BY THE STRUCTURE - APPROX 8CM WIDE DK GY TUFFACEOUS SLTST IN THE MIDDLE AT AN OBLIQUE ANGLE.
	6.21	6.44	0.23			COAL	C-5 CRUMBLY TO PWDRY, MIGHT BE SHRD (DUE TO FOLDING).

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	6.44	6.54	0.10			TUFF	RUSTY, SOFT, RUBBLY, CARB DEBRIS. AS PE R THE PREVIOUS TUFF.
	6.54	6.84	0.30			COAL	C-5 MIXED W MUDST, DAMP & SOFT.
	6.84	8.10	1.26			MUDSTONE	DK.GY RUBBLY TO SPLINTERY, CONC CHARACTER.
	8.10	9.06	0.96			COAL	C-5 WET, CRUMBLY TO PWDRY(AT TOP), MNR BRIG HT COAL STRGS.
	9.06	9.47	0.41			COAL	C-2 CHUNKY & CRUMBLY, WET.
	9.47	9.50	0.03			TUFF	BN TUFFACEOUS SLTST, RUSTY, MNR CARB WISPS
	9.50	9.67	0.17			COAL	C-3 RUBBLY, WET.
	9.67	9.75	0.08			TUFF	TUFFACEOUS SLTST, ABNT CARB WISPS, FE S PECKS.
	9.75	10.33	0.58			COAL	MIXED W CARB MUDST, BDG IS CONTORTED, D ISCONTINUOUS, AFFECTED BY STRUCTURE.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	10.33	10.43	0.10			TUFF	VFG.DK.BN TUFFACEOUS SS, V RUSTY, CARB & COALY WI SPS THROUGHOUT, BLKY, BDS ARE WAVERING VERTICAL TO OVERTURNED.
	10.43	10.66	0.23			COAL	C-4 CRUMBLY, WET, C-4?
	10.66	10.91	0.25			MUDSTONE	CARB.BLK BRIGHT COAL STRGS W RUSTY RESIDUE, RUBB LY.
	10.91	11.11	0.20			SANDSTONE	VFG SLIGHTLY TUFFACEOUS, BECOMING MORE TOWA RDS BASE, SOFT, V RUSTY, CARB & COALY W ISPS THROUGHOUT, FAINT LAMS, RUBBLY, 1C M COAL IN MIDDLE.
	11.11	11.55	0.44			COAL	C-3 NUMEROUS BRIGHT COAL STRGS AT TOP, PWDR Y AT BASE.
	11.55	11.77	0.22			MUDSTONE	DK.BN PL CASTS, GRASS BLADE CASTS, RUBBLY.
	11.77	16.37	4.60			COVERED	POSSIBLY THE AXIS OF AN ANTICLINE - BED S ARE DIPPING SLIGHTLY TO THE NORTHEAST FROM HERE ON. OVERBURDEN HAS SLUMPED I N.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	16.37	16.55	0.18			MUDSTONE	M.GY ABNT PL IMPRESSIONS, STEMS & LEAVES, BD S ARE SLIGHTLY CONTORTED, SKS SURFACES.
	16.55	16.68	0.13			MUDSTONE	CARB.BLK ABNT COALY STRGS.
	16.68	17.14	0.46			COAL	C-4 CRUMBLY & WET, 5CM CARB MUDST BAND IN M IDDLE.
	17.14	17.36	0.22			SANDSTONE	FG TUFFACEOUS, VERY RUSTY, RUBBLY, SOFT, C ARB WISPS, 2CM CARB LNS THROUGH MIDDLE OF UNIT.
	17.36	17.68	0.32			MUDSTONE	CARB.BLK ABNT BRIGHT COAL STRGS WHICH HAVE RUSTY CLEAT SURF, PL DEBRIS, RUBBLY.
	17.68	17.96	0.28			COAL	C-3 CRUMBLY.
	17.96	18.05	0.09			TUFF	VFG TUFFACEOUS SS, V RUSTY, ABNT CARB WISPS , BLKY.
	18.05	18.29	0.24			COAL	C-4 WET, SOFT, BRIGHT COAL STRGS.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	18.29	18.32	0.03			TUFF	TUFFACEOUS SLTST W CARB WISPS THROUGHOUT.
	18.32	18.69	0.37			COAL	C-2 CRUMBLY.
	18.69	19.49	0.80			COAL	C-5 RUBBLY TO CRUMBLY, WET, PRESENT ROOT PENETRATION OBSCURES COAL TYPES.
	19.49	20.09	0.60			MUDSTONE	M.GY RUBBLY & SPLINTERY, SML PSEUDO CONC AS BEFORE, TR COALY STRGS, MONOTONOUS.
	20.09	29.09	9.00			COVERED	SOME SLUMPED MUDST ALSO. POSSIBLE SYNCLINE AXIS, BEDS FROM HERE ON ARE CLOSE TO VERTICAL. DANGEROUS LOGGING FROM HERE ON DUE TO OVERHANGING OVERBURDEN.
	29.09	29.59	0.50			MUDSTONE	M.GY RUBBLY.
	29.59	30.27	0.68			COAL	C-4 BRIGHT STRGS TO 0.5CM.
	30.27	30.57	0.30			TUFF	TUFFACEOUS SLTST, ABNT COAL STRGS.
	30.57	30.67	0.10			COAL	C-4 C-4?

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	30.67	30.76	0.09			TUFF	DK.BN TUFFACEOUS SLTST, CARB WISPS, WTHRD RUSTY, BLKY TO RUBBLY.
	30.76	30.95	0.19			COAL	C-3
	30.95	31.41	0.46			MUDSTONE	CARB.BLK SLTST WEDGE PINCHING IN FROM BOTTOM OF TRENCH INDICATING THAT BEDS ARE DISTORTED.
	31.41	33.31	1.90			COAL	C-4 A GENERAL MEASUREMENT TAKEN, TOO DANGEROUS TO UNCOVER WHAT HAS SLUMPED INTO COAL, PROBABLY COAL BUT IS SCOURED BY OVERBURDEN.
	33.31	33.56	0.25			MUDSTONE	CARB.BLK NUMEROUS BRIGHT COAL WISPS.
	33.56	33.73	0.17			SANDSTONE	SLTY TUFFACEOUS, CARB & COALY MUDST BAND 2CM DOWN MIDDLE.
	33.73	34.67	0.94			COAL	C-2

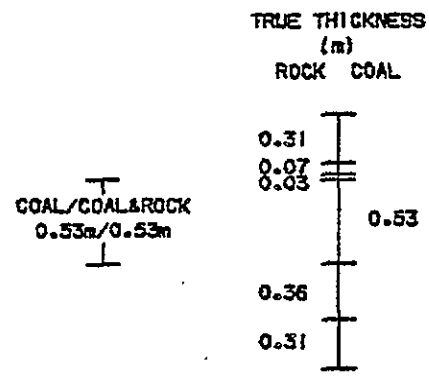
* DENOTES MEASURED BCA

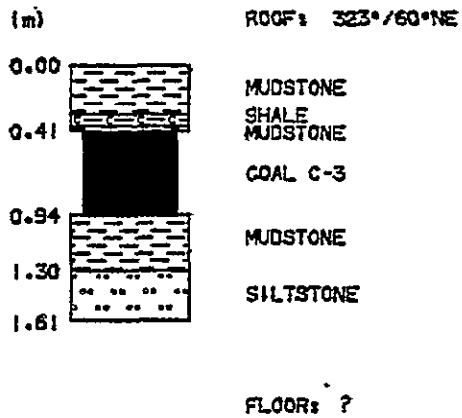
XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	34.67	34.69	0.02			TUFF	TUFFACEOUS SLTST, CARB & COALY WISPS.
	34.69	34.93	0.24			COAL	C-3
	34.93	35.01	0.08			SANDSTONE	SLTY TUFFACEOUS, CARB WISPS THROUGHOUT, RUSTY, VARIES FROM 0.07 TO 0.09CM THICK, SLUMPED ABV.
	35.01	35.34	0.33			COAL	C-2 CRUMBLY.
	35.34	35.54	0.20			MUDSTONE	LT-M.GY PL FOS & DEBRIS, SOME ARE CARB & COALY, LISTRIC SURF.
	35.54	36.54	1.00			COAL	SLUMPED, AT LEAST 1 M, MIXED W OVERBURDEN, PROBABLY NOT ALL IN PLACE. END OF TRENCH.

* DENOTES MEASURED BCA





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MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-025
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.4m
TRENCH LENGTH	:	1.61m
TRENCH BEARING	:	260°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83043

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: B. CARPENTER	DATE: 17/07/83
APPROVED BY: V. DUFORD	

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83043

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.31	0.31			MUDSTONE	DK.GY WTHRD LT GY BN, SOFT, THN LAM, FLAKEY, ABNT CARB PL FRAGS, FE STN ON BDG. PART OF ROOF.
	0.31	0.38	0.07			SHALE	CARB.BLK SOFT, FLAKEY, BN STREAK.
	0.38	0.41	0.03			MUDSTONE	DK.BN SEMI HARD, ABNT COAL STRGS.
	0.41	0.94	0.53			COAL	C-3 HARD & BANDED, APPEARS MOD CLEAN.
	0.94	1.30	0.36			MUDSTONE	DK.GY.THNB LAM, SOFT, RUBBLY, PYRITE FLECKS.
	1.30	1.61	0.31			SILTSTONE	M.BN.THNB LAM, SOFT, RUBBLY.

* DENOTES MEASURED BCA

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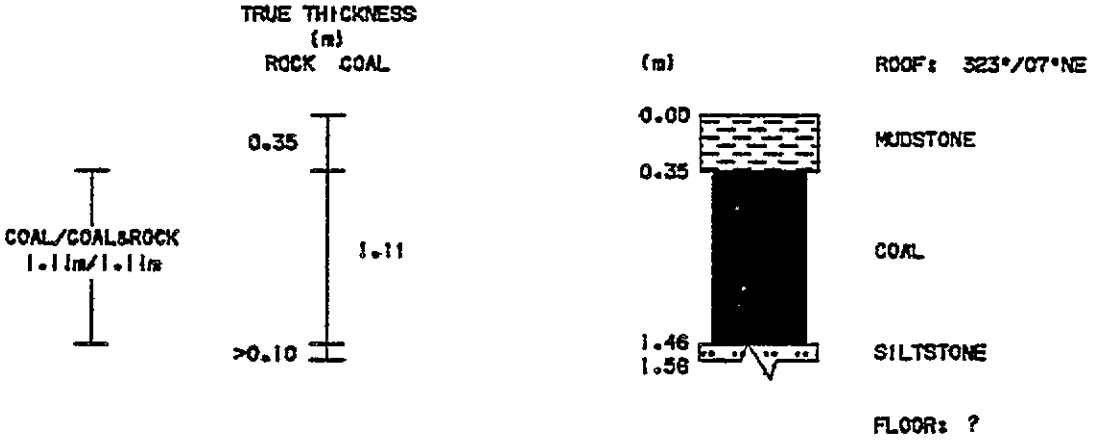
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83044

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.35	0.35			MUDSTONE	VTHNB WTHRD RUST BN, FLAKEY, HIGHLY WTHRD. ROOF.
	0.35	1.46	1.11			COAL	SHALEY, SKS, HIGHLY SHRD, POLISHED SURF
	1.46	1.56	0.10			SILTSTONE	WTHRD REDDISH BN, HARD, THN LAM, PYRITE FLECKS, OCC CARB PL REMAINS. FLOOR.

* DENOTES MEASURED BCA



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AIR PHOTO NUMBER	:	BC 7191-025
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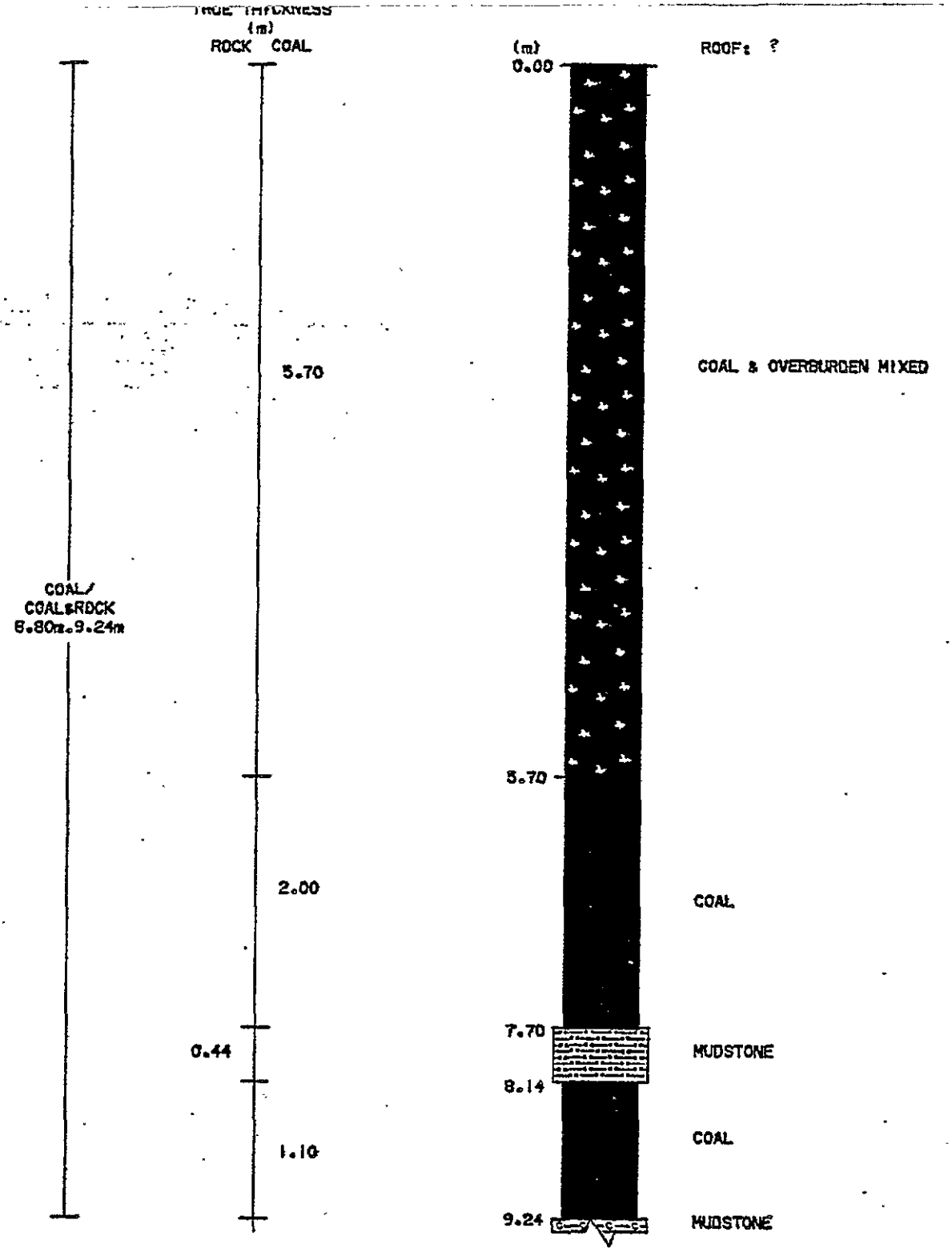
TRENCH WIDTH	:	0.8m
TRENCH LENGTH	:	1.56m
TRENCH BEARING	:	VERTICAL
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83044

DRAWN BY: D. DOLPH	SCALE: 1:50
LOGGED BY: B. CARPENTER	DATE: 17/07/93
APPROVED BY: V. DUFORD	

GDR:1205,5718309B6008.LOG



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AIR PHOTO NUMBER	:	BC 7191-090
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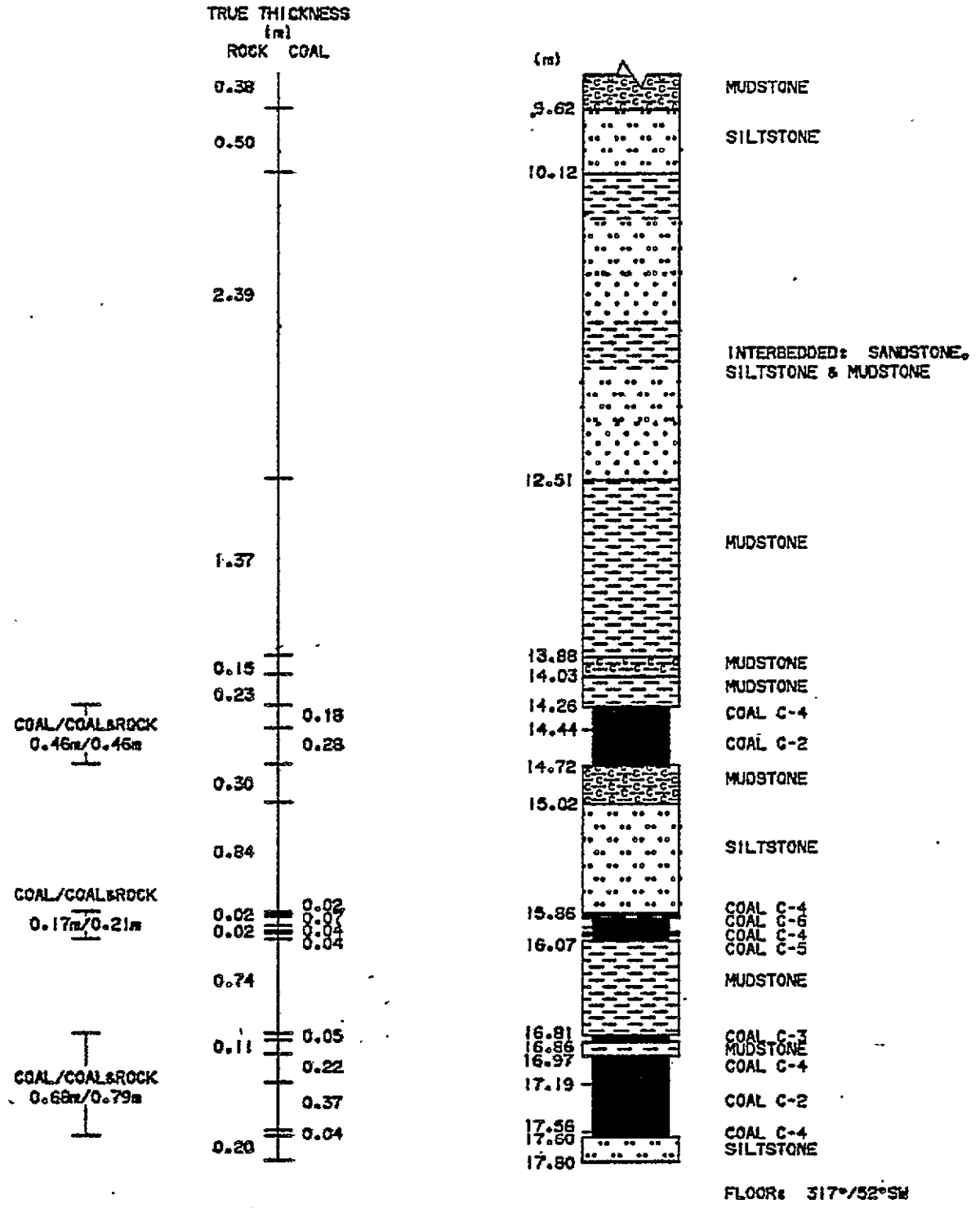
TRENCH WIDTH	:	2.0m
TRENCH LENGTH	:	17.80m
TRENCH BEARING	:	227°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83045

DRAWN BY: C. GOODINGS	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE:
APPROVED BY: V. DUFORD	PAGE 1 OF 2

050:1205.5718309860009.LOG



GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83045

DRAWN BY: C. GOODINGS	SCALE: 1:50
LOGGED BY: V. DUFORD	DATE:
APPROVED BY: V. DUFORD	PAGE 2 OF 2

GDG:(265,5716309&6009.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83045

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	7.70	7.70			COAL	MIXED W OVERBURDEN, MEASUREMENT TAKEN NORMAL TO STRIKE AND DIP OF ADJOINING (NEAREST) BEDS. TRUE COAL TYPE, PTGS ETC INDETERMINATE. THIS 7.70M IS A BEST TRUE THICKNESS ESTIMATE (POGO STICK METHOD).
	7.70	8.14	0.44			MUDSTONE	SLTY.DK.BN ABNT TINY PL LEAF OR BLADE FOS, V RUBBLY BECOMING M GY TO TOP, SLTY ZONE IN MIDDLE.
	8.14	9.24	1.10			COAL	C-3 C-3 FOR THE MOST PART, SOME MUDST CHUNKS INCORPORATED INTO LOWER PORTION, COAL IS CRUMBLY (SHRD?).
	9.24	9.62	0.38			MUDSTONE	CARB.DK.GY ABNT CARB & COAL PL REMAINS, SHALEY HABIT IN PART, BREAKS EASILY, SOME SLUMPING HAS OCCUREDIN THIS UNIT. RUSTY RESIDUE ON SOME BLADE CASTS.
	9.62	10.12	0.50			SILTSTONE	DK.GY BN WTHRING, RUSTY LAM AS WELL AS ON FRESH SURF, MNR COALY PL FRAGS, LAM, INTBD W DK GY MUDST - BLKY TO RUBBLY.
	10.12	12.51	2.39			SS&SLTST&MUD	INTBD SANDSTONE, SILTSTONE & MUDSTONE.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83045

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	12.51	13.88	1.37			MUDSTONE	M.GY V CONCRETIONARY.
	13.88	14.03	0.15			MUDSTONE	CARB.BLK WTHRD, MNR FE STN.
	14.03	14.26	0.23			MUDSTONE	LT.GY FE STN, FIS, MNR CARB STRGS.
	14.26	14.44	0.18			COAL	C-4 DULL - BRIGHT BANDED.
	14.44	14.72	0.28			COAL	C-2 BRIGHT, BLKY, MNR HARD BANDS.
	14.72	15.02	0.30			MUDSTONE	CARB.BLK PL FRAGS, FRAC.
	15.02	15.86	0.84			SILTSTONE	M.GY.VTHNB WTHRD SURF - BN, LAM, FIS, FE STN ON JO INTS WHICH ARE ||.
	15.86	15.88	0.02			COAL	C-4 SOFT & FLAKEY.
	15.88	15.90	0.02			CLAY	CARB SOFT, MALLABLE.

* DENOTES MEASURED BCA

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PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83045

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	15.90	15.97	0.07			COAL	C-6 SHALEY, FE STN ON CLEATS.
	15.97	16.01	0.04			COAL	C-4 FLAKEY, SOFT.
	16.01	16.03	0.02			CLAYSTONE	SOFT, PLASTIC.
	16.03	16.07	0.04			COAL	C-5
	16.07	16.81	0.74			MUDSTONE	DK.GY V RUBBLY, SOFT W OCC 2CM THK C-1 COAL S TRGS WHICH ARE NON || TO BDG, RUST BAND ING THROUGHOUT.
	16.81	16.86	0.05			COAL	C-3 V WTHRD, FLAKEY.
	16.86	16.97	0.11			MUDSTONE	M.GY RUBBLY, MOD SOFT.
	16.97	17.19	0.22			COAL	C-4 W ABNT PYRITE STRGS ON CLEAVAGE & BDG.
	17.19	17.56	0.37			COAL	C-2 POLISHED, FLAKEY, V SHRD.

* DENOTES MEASURED BCA

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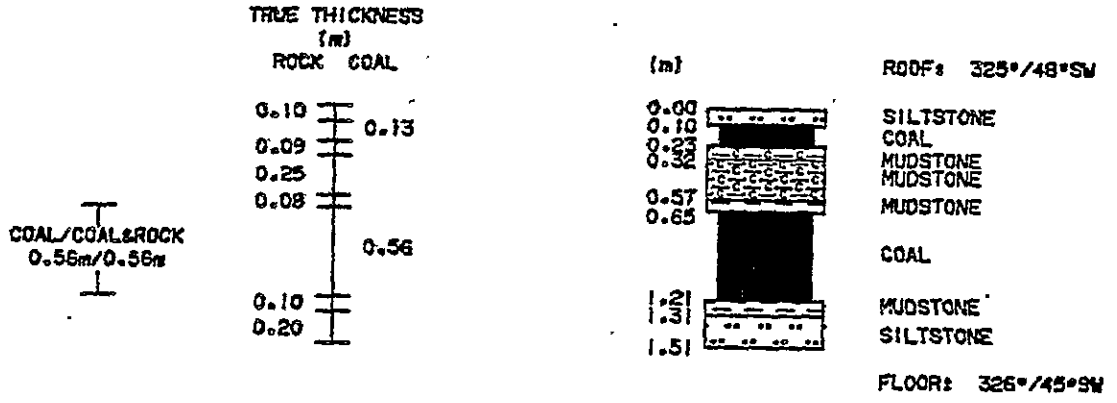
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83045

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	17.56	17.60	0.04			COAL	C-4 PWDRY, V WTHRD, MOIST.
	17.60	17.80	0.20			SILTSTONE	DK.BN MOD HARD, THN LAM. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
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MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-247
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.4m
TRENCH LENGTH	:	1.51m
TRENCH BEARING	:	235°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83046

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 18/07/83
APPROVED BY: V. DUFORD	

GDR1205.571830983009.LOG

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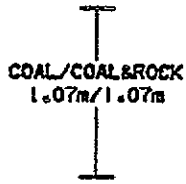
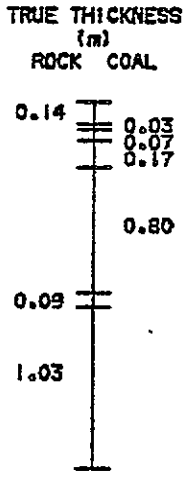
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

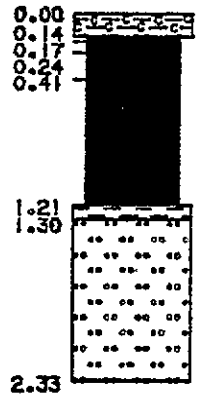
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83046

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			SILTSTONE	GY.LAM CARB PTGS, FIS. ROOF.
	0.10	0.23	0.13			COAL	BRIGHT W DULL BANDS, BLKY, HIGHLY WTHRD
	0.23	0.32	0.09			MUDSTONE	CARB.GY.LAM COALY STRGS, FE STN, SOFT.
	0.32	0.57	0.25			MUDSTONE	CARB.GY.LAM PL FRAGS, FE STN, BLKY.
	0.57	0.65	0.08			MUDSTONE	VUGGY, FE STN.
	0.65	1.21	0.56			COAL	BRIGHT, PWDR, FE STN, CLAY STRGS(<1MM).
	1.21	1.31	0.10			MUDSTONE	CARB.BLK. FE STN, FIS, PL FRAGS, WTHRD. PART OF F LOOR.
	1.31	1.51	0.20			SILTSTONE	GY PL FRAGS, FIS, BLKY, FE STN. FLOOR.

* DENOTES MEASURED BCA







ROOF: 333°/46°SW

MUDSTONE
COAL C-1
COAL C-5
COAL C-4

COAL C-3

MUDSTONE

SILTSTONE

FLOOR: 330°/45°SW

FORMATION	:	GETHING
UTM COORDINATES	:	6163580mN, 544105mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-247
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	2.33m
TRENCH BEARING	:	235°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83047

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: A. HOTYKA	DATE: 18/07/83
APPROVED BY: V. DUFORD	

GDR1208,5718309660G9.LOG

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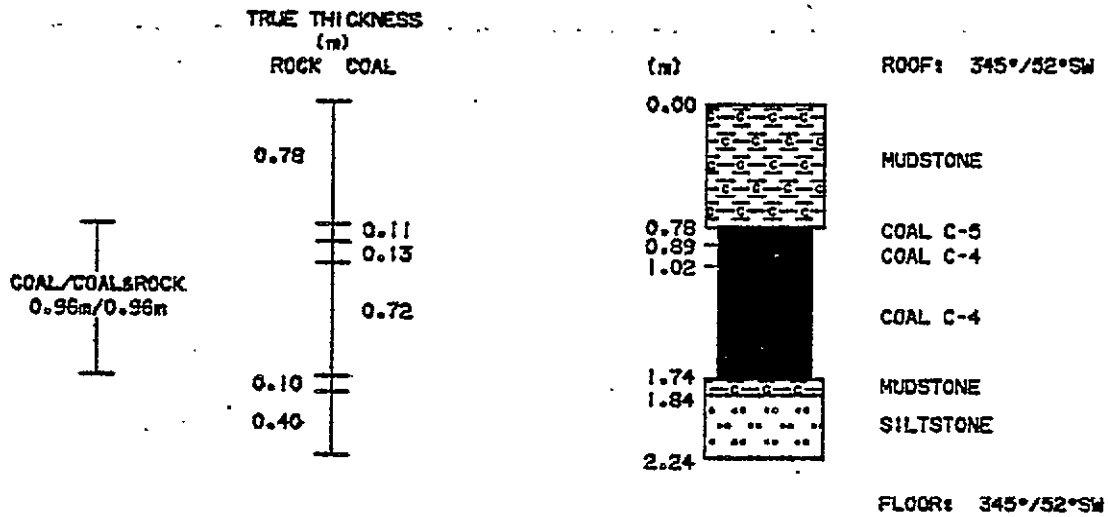
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83047

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.14	0.14			MUDSTONE	CARB.DK.GY PL FRAGS. ROOF.
	0.14	0.17	0.03			COAL	SHINY, HARD.
	0.17	0.24	0.07			COAL	SOFT, DULL, BLKY.
	0.24	0.41	0.17			COAL	C-4 FLAKEY.
	0.41	1.21	0.80			COAL	C-3
	1.21	1.30	0.09			MUDSTONE	GY CARB PL FRAGS, BN GY, FE STN. PART OF F LOOR.
	1.30	2.33	1.03			SILTSTONE	GY ROOF.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6163575mN, 544095mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-247
TRENCH DEPTH	:	0.4m
TRENCH WIDTH	:	0.3m
TRENCH LENGTH	:	2.24m
TRENCH BEARING	:	235°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83048

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: A. HOTYKA	DATE: 18/07/83
APPROVED BY: V. DUFORD	

GDR:(205,5718309984009,LOG

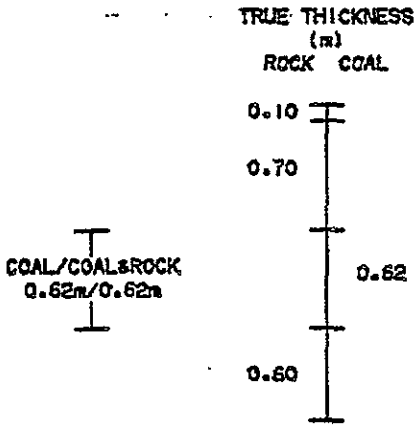
XXXXX

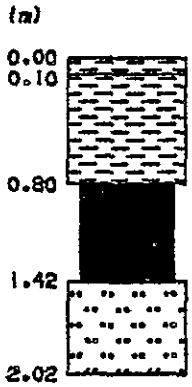
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83048

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.78	0.78			MUDSTONE	CARB.DK.GY FRAC, FE STN. ROOF.
	0.78	0.89	0.11			COAL	C-5 HARD, BLKY, DULL.
	0.89	1.02	0.13			COAL	C-4 FE STN, SHINY.
	1.02	1.74	0.72			COAL	C-4 FE STN, BLKY.
	1.74	1.84	0.10			MUDSTONE	CARB.DK.GY FRAC, FE STN.
	1.84	2.24	0.40			SILTSTONE	GY.LAM FIS. FLOOR.

* DENOTES MEASURED BCA





ROOF: 2

MUDSTONE

MUDSTONE

COAL C-3

SILTSTONE

FLOOR: 327°/84°SW

FORMATION	:	GETHING
UTM COORDINATES	:	6163470mN, 543820mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-247
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	2.02m
TRENCH BEARING	:	237°
TRENCH SLOPE	:	15°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83049

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: B. CARPENTER	DATE: 18/07/83
APPROVED BY: V. DUFORD	

GDR:[265.571830986009.LOG

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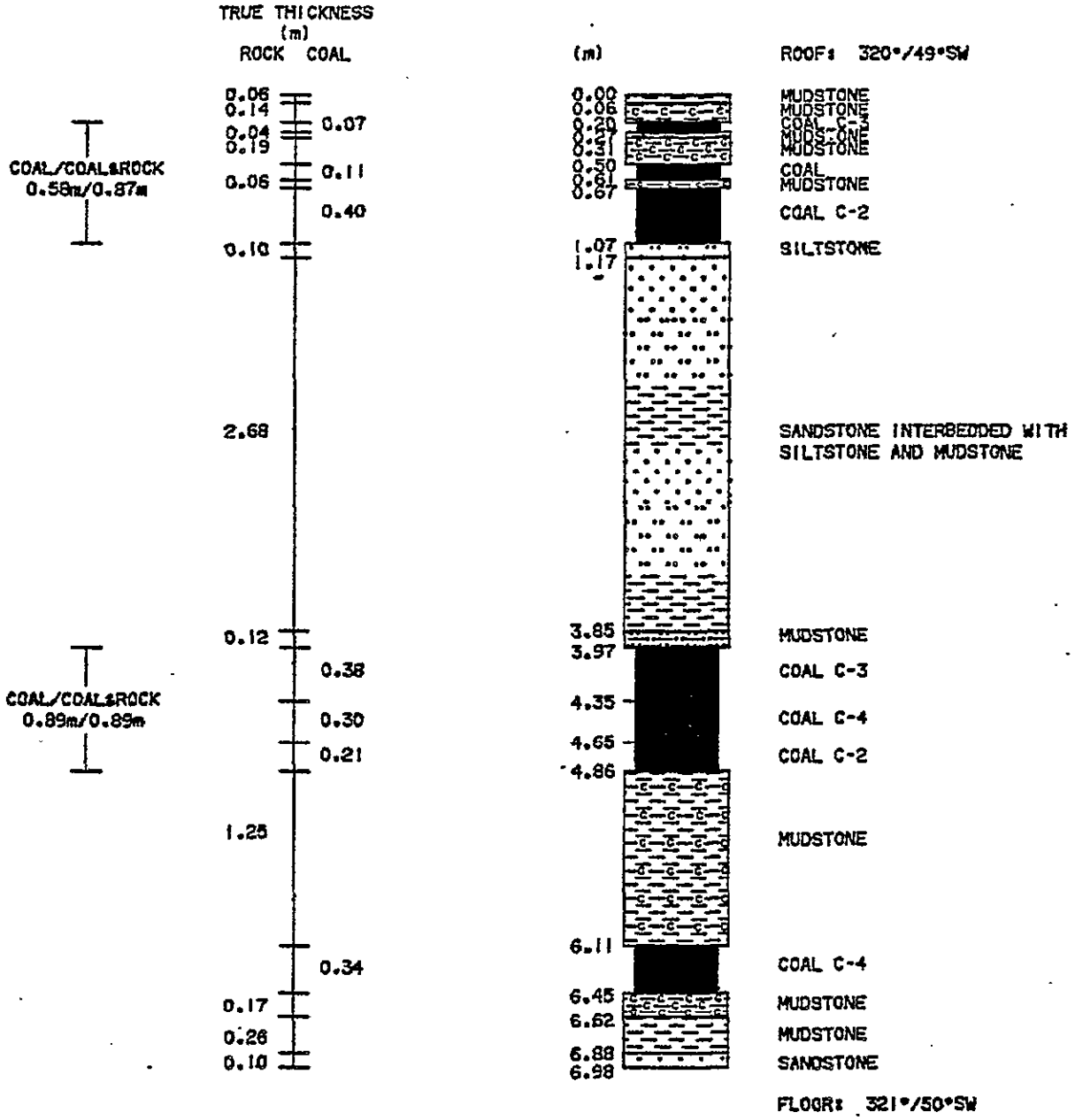
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83049

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.GY DK BN GY, HIGHLY WTHRD, SOFT, RUBBLY. R OOF.
	0.10	0.80	0.70			MUDSTONE	DK.GY.LAM DK BN GY, ABNT PL FRAGS, OCC COALY STRG . PART OF ROOF.
	0.80	1.42	0.62			COAL	C-3 SOFT, BLKY.
	1.42	2.02	0.60			SILTSTONE	M.GY.MAS ABNT CARB PL FRAGS, MOD SOFT, CRUMBLY, OCC FE STN FRAC, GRADATIONAL CTC INTO C OAL. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6163500mN, 544005mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-247
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	7.00m
TRENCH BEARING	:	230°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83050

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: C. GOODINGS	DATE: 18/07/83
APPROVED BY: V. DUFORD	

GDR1205,5716309860I0.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83050

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.06	0.06			MUDSTONE	CLYY.BLK BADLY WTHRD, FE STN.
	0.06	0.20	0.14			MUDSTONE	CARB.BLK BLKY, FE STN, GRADING MORE CARB DOWNWARDS, OCC COAL.
	0.20	0.27	0.07			COAL	C-3 BLKY.
	0.27	0.31	0.04			MUDSTONE	LT.GY.LAM FIS, MNR PL FRAGS, FE STN ON LOWER HALF
	0.31	0.50	0.19			MUDSTONE	CARB.GY PWDRY, BRIGHT, MNR COAL STRGS.
	0.50	0.61	0.11			COAL	BRIGHT, PWDRY.
	0.61	0.67	0.06			MUDSTONE	CARB.GY.LAM FIS, BADLY WTHRD.
	0.67	1.07	0.40			COAL	C-2 BRIGHT, BLKY TO PWDRY, BRIGHT BANDED 20 MM.
	1.07	1.17	0.10			SILTSTONE	LT.GY.MAS FIS, LAM, GRADES TO SST. FLOOR.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83050

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.17	3.85	2.68			SS&SLTST&MUD	LT.BN INTBD SANDSTONE, SILTSTONE AND MUDSTONE . SLTST- LT GY, FIS. MUDST - GY.
	3.85	3.97	0.12			MUDSTONE	SLTY.GY FIS, FRAC.
	3.97	4.35	0.38			COAL	C-3 BLKY.
	4.35	4.65	0.30			COAL	C-4 BLKY.
	4.65	4.86	0.21			COAL	C-2 BLKY TO PWDRY.
	4.86	6.11	1.25			MUDSTONE	CARB FE STN, FIS, BADLY WTHRD, OCC THN BRIGH T COAL BANDS, CARB STRGS.
	6.11	6.45	0.34			COAL	C-4 BLKY, ROOTS THROUGHOUT.
	6.45	6.62	0.17			MUDSTONE	CARB PL FRAGS, MOIST, BLKY.
	6.62	6.88	0.26			MUDSTONE	DK.GY FE STN, FIS.

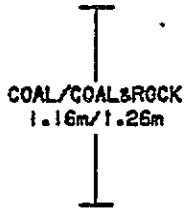
* DENOTES MEASURED BCA

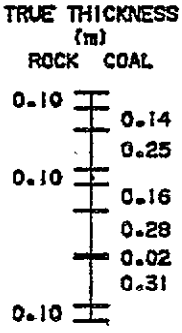
XXXXX

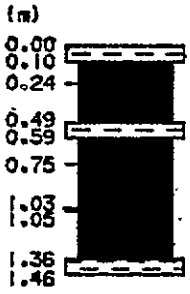
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83050

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	6.88	6.98	0.10			SANDSTONE	BF WTHRD LT BN, FLAGGY. FLOOR.

* DENOTES MEASURED BCA







ROOF: ?

MUDSTONE
COAL C-4
COAL C-3
MUDSTONE
COAL C-3
COAL C-2
COAL C-4
COAL C-3
MUDSTONE

FLOOR: 295°/30°SW

FORMATION	:	GETHING
UTM COORDINATES	:	6163680mN, 544480mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-247
TRENCH DEPTH	:	2.0m
TRENCH WIDTH	:	1.0m
TRENCH LENGTH	:	1.50m
TRENCH BEARING	:	N/A
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83051

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: R. INKSTER	DATE: 18/07/83
APPROVED BY: V. DUFORD	

GDR:1206,5718309866016.LOG

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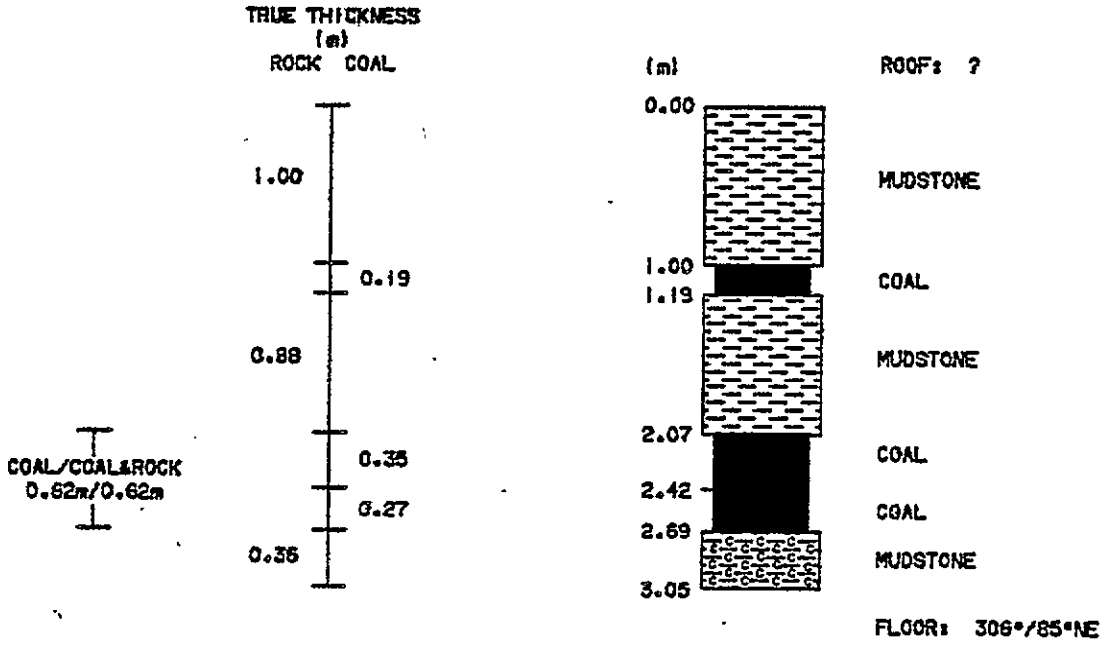
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83051

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.GY FLAGGY, CARB PL FRAGS, V MNR FE STN. RO OF.
	0.10	0.24	0.14			COAL	C-4 PWDR, SOFT, WET.
	0.24	0.49	0.25			COAL	C-3 SHRD, CRUMBLY.
	0.49	0.59	0.10			MUDSTONE	M-DK.GY FE STN, CARB PL FRAGS, V MNR COAL PTGS.
	0.59	0.75	0.16			COAL	C-3 BLKY, BREAKS ALONG CLEATS, SHRD.
	0.75	1.03	0.28			COAL	C-2 BRITTLE, SHRD.
	1.03	1.05	0.02			COAL	C-4 W SPECKLED WHITE. TUFF?.
	1.05	1.36	0.31			COAL	C-3 PWDR, SOFT.
	1.36	1.46	0.10			MUDSTONE	DK.GY V FLAGGY, ABNT FE STN. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	DRESSER
UTM COORDINATES	:	6169500mN, 536760mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 81031-30
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.4m
TRENCH LENGTH	:	3.05m
TRENCH BEARING	:	216°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83052

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: M. MILNE	DATE: 18/07/83
APPROVED BY: V. DUFORD	

GDR:[205,57]830965010.LOG

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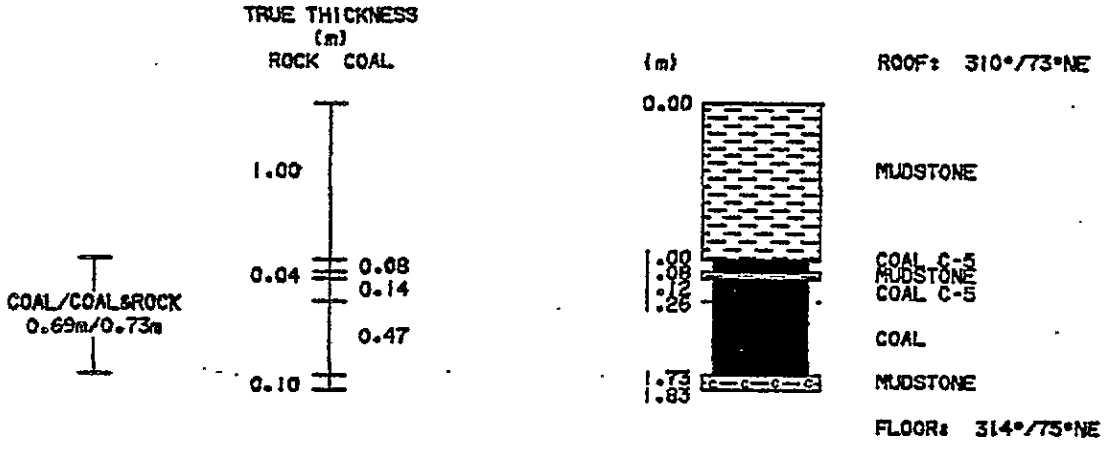
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83052

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.00	1.00			MUDSTONE	BN RUBBLY, GY BN, FE ST CONC. ROOF.
	1.00	1.19	0.19			COAL	HARD, SHINY, CRUMBLY.
	1.19	2.07	0.88			MUDSTONE	BN RUBBLY, GY BN, FE ST CONC.
	2.07	2.42	0.35			COAL	CHUNKY, LIGHT, HARD, BRIGHT BANDED.
	2.42	2.69	0.27			COAL	BRIGHT, WET, CRUMBLY.
	2.69	3.05	0.36			MUDSTONE	CARB.DK.GY DK BN/GY, V CARB, PL FRAGS, FE STN. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6169550mN, 536780mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 81031-30
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.83m
TRENCH BEARING	:	224°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83053

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: M. MILNE	DATE: 16/07/83
APPROVED BY: Y. DUFORD	

6801:205,5718309860:0.LOG

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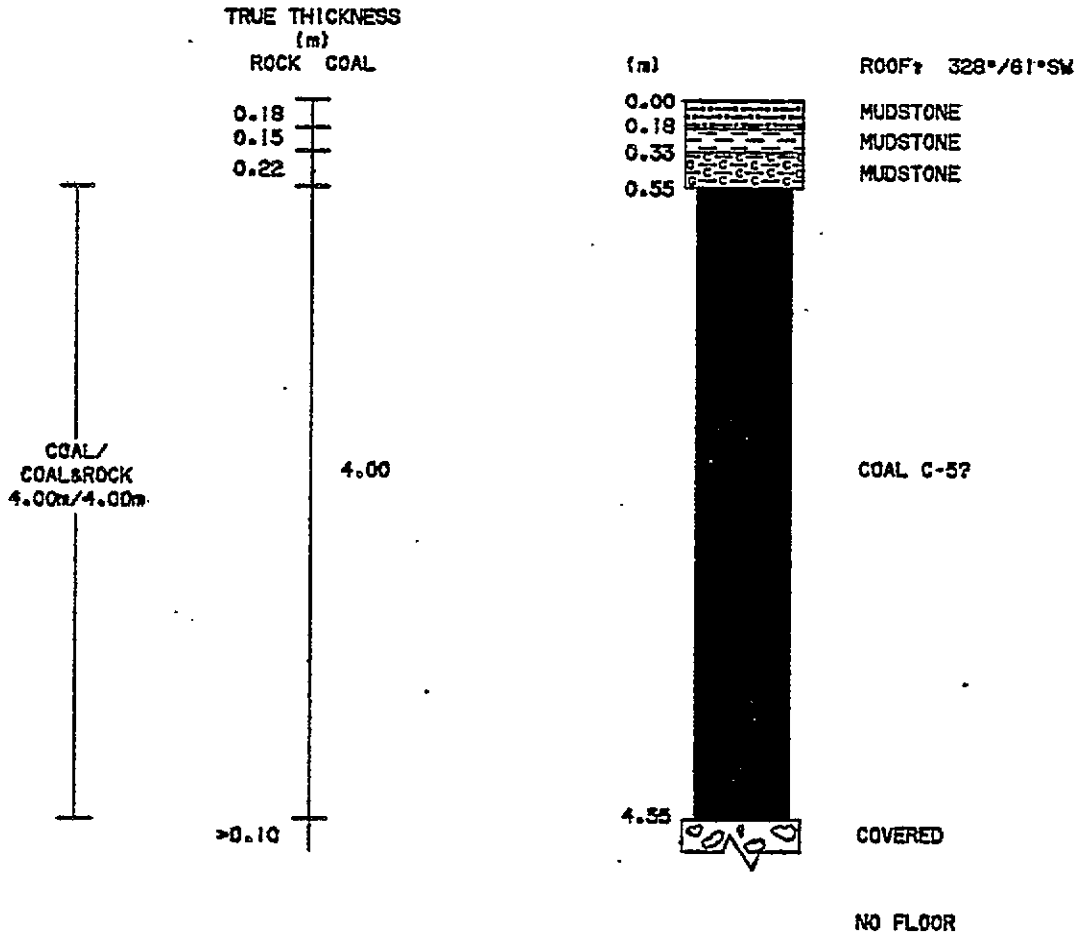
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83053

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.00	1.00			MUDSTONE	DK.GY MNR FE STN, SPLINTERY. ROOF.
	1.00	1.08	0.08			COAL	C-5 CRUMBLY, BREAKS INTO SPLINTERS.
	1.08	1.12	0.04			MUDSTONE	PTG, SILVERY, FE STN.
	1.12	1.26	0.14			COAL	C-5 DULL, PWDRY.
	1.26	1.73	0.47			COAL	PWDRY, WET.
	1.73	1.83	0.10			MUDSTONE	CARB.DK.GY LARGE PL CASTS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6174960mN, 540650mE
MAP CARD NUMBER	:	930/9WK-10
AIR PHOTO NUMBER	:	HA 80780-6-234
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	1.0m
TRENCH LENGTH	:	10.6m 4.65
TRENCH BEARING	:	211°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83054

DRAWN BY: D. GOLPH	SCALE: 1:50
LOGGED BY: N. MILNE	DATE: 10/06/83
APPROVED BY: V. DUFORD	

GDR1206.571630968010.LOG

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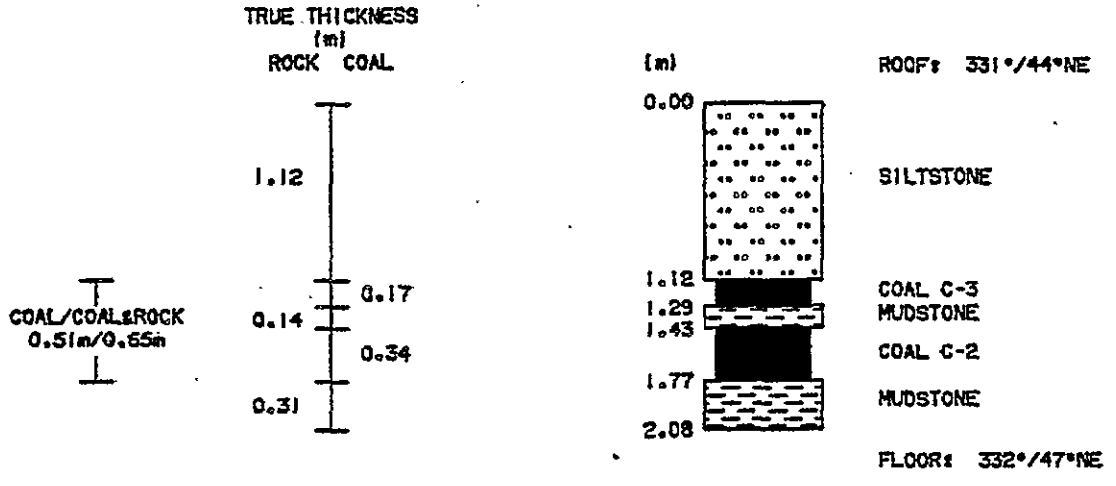
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83054

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.18	0.18			MUDSTONE	SLTY.BN WTHRD BN, FE STN, VF LAM, CARB ROOTLETS , FRAC, BREAKS INTO V SML ANGULAR PLATE S.
	0.18	0.33	0.15			MUDSTONE	GY WTHRS GY, FAINT LAM, FE STN, ROOTLETS, CARB BLEBS, PL FRAGS.
	0.33	0.55	0.22			MUDSTONE	CARB.DK.GY HIGHLY FRAC, SOFT, CRUMBLY. ROOF.
	0.55	4.55	4.00			COAL	C-5 PWDRY.
	4.55	4.65	0.10			COVERED	NO FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	DRESSER
UTM COORDINATES	:	6164990mN, 539230mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-84, 85, 86
TRENCH DEPTH	:	CUTBANK EXPOSURE
TRENCH WIDTH	:	CUTBANK EXPOSURE
TRENCH LENGTH	:	2.08m
TRENCH BEARING	:	240°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83055

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: M. MILNE	DATE: 11/08/83
APPROVED BY: V. DUFORD	

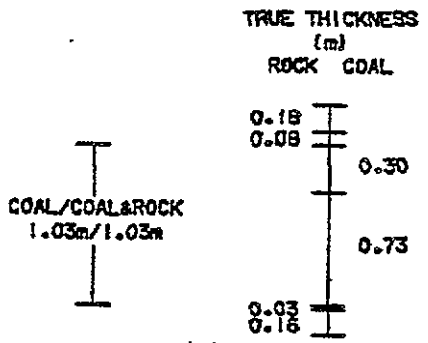
XXXXX

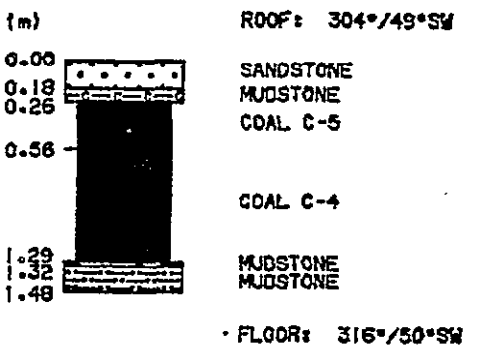
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83055

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.12	1.12			SILTSTONE	M.GY.THKB WTHRD BN GY, FAINT FE STN, CARB LAM. RO OF.
	1.12	1.29	0.17			COAL	C-3 WET, SHRD, SHINY, BLKY, LIGHT.
	1.29	1.43	0.14			MUDSTONE	DK.GY WTHRD M GY, COALY LN, LISTRIC SURF, PL FRAGS(CARB & FE STN).
	1.43	1.77	0.34			COAL	C-2 WET, SHRD, BLKY, LIGHT.
	1.77	2.08	0.31			MUDSTONE	M.GY.THNB WTHRD BN GY, FE STN. FLOOR.

* DENOTES MEASURED BCA





FORMATION	:	GETHING
UTM COORDINATES	:	6164590mN, 545625mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7191-091
TRENCH DEPTH	:	0.35m
TRENCH WIDTH	:	0.5m
TRENCH LENGTH	:	1.80m 1.48
TRENCH BEARING	:	214°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-MB-TRC-83056

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: B. CARPENTER	DATE: 15/08/83
APPROVED BY: V. DUFORD	

080:1206,571830966011.LOG

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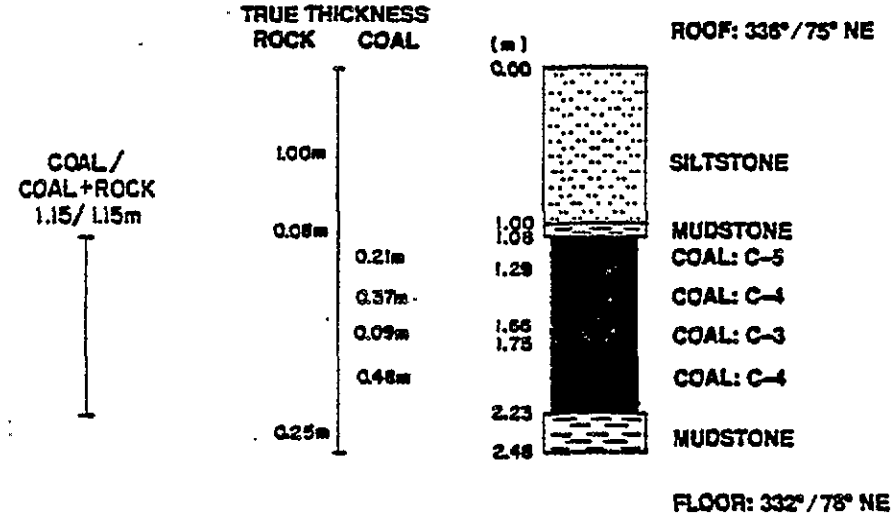
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC83056

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.18	0.18			SANDSTONE	VFG.M.BN.THNB FAINT CARB LAM.
	0.18	0.26	0.08			MUDSTONE	CARB.M-DK.GY MICACEOUS. ROOF.
	0.26	0.56	0.30			COAL	C-5 PWDR, SOFT, SHRD AT BASE.
	0.56	1.29	0.73			COAL	C-4 C-4 TO C-5, SEMI HARD, SHRD, ABNT ROOTS FROM LIVE TREES.
	1.29	1.32	0.03			MUDSTONE	ABNT FE STN, NUMEROUS COALY STRGS.
	1.32	1.48	0.16			MUDSTONE	SLTY.LT-M.GY ABNT CARB PL DEBRIS & FE STN ON IMPRESSIONS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6175560 m N, 541 610 m E
MAP CARD NUMBER	:	93O/9WK-11
AIR PHOTO NUMBER	:	HA 80780.6.233
TRENCH DEPTH	:	CUTBANK
TRENCH WIDTH	:	CUTBANK
TRENCH LENGTH	:	2.48 m
TRENCH BEARING	:	238°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT
TRENCH LOG
GDR-MB-TRC 82001

DRAWN BY: S. GREGG	SCALE 1:50
LOGGED BY: V. ODEGAARD	DATE JULY/82
APPROVED BY:	

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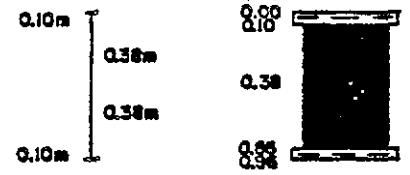
82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.00	1.00			SILTSTONE	CARB SLIGHTLY FERRUGINOUS.
	1.00	1.08	0.08			MUDSTONE	FER
	1.08	1.29	0.21			COAL	C-5 WEATHERED AND CRUMBLY
	1.29	1.66	0.37			COAL	C-4 CRUMBLY,POWDERY; WEATHERED WITH 1CM MUD ST. BAND 1/2 WAY THROUGH UNIT.
	1.66	1.75	0.09			COAL	C-3 CRUMBLY TO POWDERY; WEATHERED.
	1.75	2.23	0.48			MUDSTONE	SLTY.M.GY MINOR PLANT CASTS; RUBBLY; CARBONACEOUS AND SHALY.

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
0.76m/0.76m



ROOF: 334°/54° NE

FLOOR: 334°/54° NE

FORMATION	:	GETHING
UTM COORDINATES	:	6168050 m N, 538 070 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC-7190-158
TRENCH DEPTH	:	0.65 m
TRENCH WIDTH	:	0.67 m
TRENCH LENGTH	:	0.96 m
TRENCH BEARING	:	244°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-MB-TRC 82002

DRAWN BY: J. HEIDEMA	SCALE 1:50
LOGGED BY: M. BESSO	DATE JULY/82
APPROVED BY:	

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRCB2002

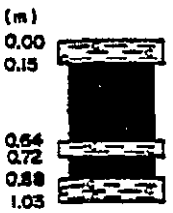
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.M.GY FERRUGINOUS; WEATHERS BROWN GRLY.
	0.10	0.48	0.38			COAL	C-6 THIN MUDSTONE PARTINGS AND THIN HARD PA RTINGS OF DULL COAL
	0.48	0.86	0.38			COAL	C-5 SOFT. POWDERY. DULL. WET.
	0.86	0.96	0.10			MUDSTONE	CARB.M.GY FERRUGINOUS. WEATHERS BROWNISH. FISSILE .

* DENOTES MEASURED BCA

COAL / COAL+ROCK
0.65 / 0.73m

TRUE THICKNESS

ROCK	COAL
0.15m	
	0.49m
0.08m	
	0.16m
0.15m	



MUDSTONE
COAL: C-4
MUDSTONE
COAL: C-1
MUDSTONE

ROOF: 338° / 80° NE

FLOOR: 338° / 80° NE

FORMATION	:	GETHING
UTM COORDINATES	:	6167950 m N, 537 700 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC-7190-158
TRENCH DEPTH	:	0.40 m
TRENCH WIDTH	:	0.46 m
TRENCH LENGTH	:	1.03 m
TRENCH BEARING	:	248°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-MB-TRC 82003

DRAWN BY: J. HEIDEMA	SCALE 1:50
LOGGED BY: M.BESSO	DATE JULY/82
APPROVED BY:	

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRCB2083

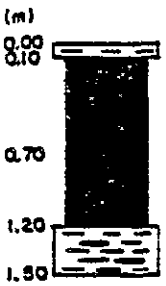
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.15	0.15			MUDSTONE	CARB.DK.BN VERY FERRUGINOUS.
	0.15	0.64	0.49			COAL	C-4 DULL WITH BRIGHT BANDS. SOFT. RUBBLY.
	0.64	0.72	0.08			MUDSTONE	CARB CUALY. PHYLLITIC SHEEN. FISSILE
	0.72	0.88	0.16			COAL	HARD. BRIGHT.
	0.88	1.03	0.15			MUDSTONE	CARB.M.GY WEATHERS LIGHT GREY. RUBBLY.

* DENOTES MEASURED BCA

COAL / COAL + ROCK
1.10 / 1.10m

TRUE THICKNESS
ROCK COAL

0.10m
0.60m
0.50m
0.30m



ROOF: 340° / 48° SW

MUDSTONE

COAL:

COAL:

MUDSTONE

FLOOR: 336° / 52° SW

FORMATION	:	DRESSER
UTM COORDINATES	:	6167900 m N, 537 510 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC-7190-158
TRENCH DEPTH	:	0.66 m
TRENCH WIDTH	:	0.60 m
TRENCH LENGTH	:	1.50 m
TRENCH BEARING	:	250°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG

GDR–MB–TRC 82004

DRAWN BY: J. HEIDEMA	SCALE 1 : 50
LOGGED BY: M. BESSO	DATE JULY / 82
APPROVED BY:	

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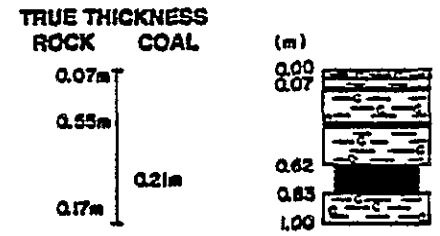
82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.GY ABUNDANT PLANT FRAGMENTS. WEATHERS RUST Y BROWN. FISSILE CARBONACEOUS.
	0.10	0.70	0.60			COAL	C-5 SOFT DULL POWDERY
	0.70	1.20	0.50			COAL	C-4 DULL. HARD. BRIGHT BANDS RELATIVELY RES ISTANT. LIGHT
	1.20	1.50	0.30			MUDSTONE	CARB RELATIVELY RESISTANT. VERY CARB. DK. RU BBLY. COALY.

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
0.21/0.21m



ROOF: 350°/33° E

MUDSTONE

MUDSTONE

COAL: C-4

MUDSTONE

FLOOR: 350°/33° E

FORMATION	:	GETHING
UTM COORDINATES	:	5164360 m N, 540 450 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	HA-131080-4-47
TRENCH DEPTH	:	0.20 m
TRENCH WIDTH	:	0.35 m
TRENCH LENGTH	:	1.00 m
TRENCH BEARING	:	270°
TRENCH SLOPE	:	57°W

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-MB-TRC 82005

DRAWN BY: M. MILLARD	SCALE 1:50
LOGGED BY: M. MILLARD	DATE JULY/82
APPROVED BY:	

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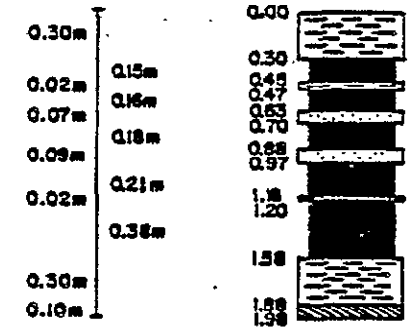
82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.07	0.07			MUDSTONE	CARB.DK.BN MNR. FE STN.
	0.07	0.62	0.55			MUDSTONE	CARB.DK.GY COALY PARTINGS
	0.62	0.83	0.21			COAL	C-4 BLOCKY; FE STN.
	0.83	1.00	0.17			MUDSTONE	CARB.DK.BN RUBBLY;

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
1.08/ 1.28m



ROOF: ?

MUDSTONE
COAL: C-5
MUDSTONE
COAL: C-4
SILTSTONE /SS
COAL: C-4
SILTSTONE
COAL: C-3
Fe STONE
COAL: C-4
SHALE
Fe STONE

FLOOR: 321°/70° SW

FORMATION	:	GETHING
UTM COORDINATES	:	6167050 m N, 540 625 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	HA 131080-5-12
TRENCH DEPTH	:	ROAD CUT
TRENCH WIDTH	:	ROAD CUT
TRENCH LENGTH	:	1.98 m
TRENCH BEARING	:	230°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG

GDR-MB-TRC 82006

DRAWN BY: S. GREGG	SCALE 1: 50
LOGGED BY: V. ODEGAARD	DATE JULY/82
APPROVED BY:	

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			MUDSTONE	M.GY RUBBLY; FE STN CONCRETION.
	0.30	0.45	0.15			COAL	C-5 WEATHERED AND POWDERY
	0.45	0.47	0.02			MUDSTONE	FE RICH (RUSTY).
	0.47	0.63	0.16			COAL	C-4 SHEARED AND CRUMBLY.
	0.63	0.70	0.07			SILTSTONE	INTERBEDDED WITH SANDSTONE; FERRUGINOUS ; CARBONACEOUS; PLATEY.
	0.70	0.88	0.18			COAL	C-4 SHEARED AND CRUMBLY.
	0.88	0.97	0.09			SILTSTONE	DK.BN CARBONACEOUS AND MICACEOUS.
	0.97	1.18	0.21			COAL	C-3 WEATHERED AND CRUMBLY.
	1.18	1.20	0.02			IRONSTONE	WEATHERED
	1.20	1.58	0.38			COAL	C-4 VERY WEATHERED; CRUMBLY; LIGHT.

* DENOTES MEASURED BCA

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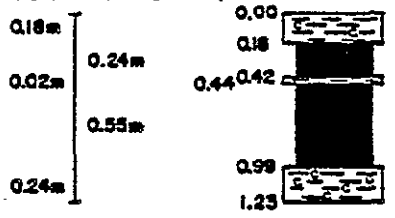
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82006

BLA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.58	1.88	0.30			SHALE	M.GY SPLINTERY.
	1.88	1.98	0.10			IRONSTONE	CONCRETIONARY BAND.

* DENOTES MEASURED BCA

COAL / COAL+ROCK
0.79 / 0.81m



ROOF: 297° / 76° E

MUDSTONE

COAL: C-5

MUDSTONE

COAL: C-5

MUDSTONE

FLOOR: 297° / 76° E

FORMATION	:	BRENOT
UTM COORDINATES	:	6169260 m N, 536 760 m E
MAP CARD NUMBER	:	93O/9WL-1
AIR PHOTO NUMBER	:	BC-7190-155
TRENCH DEPTH	:	0.50 m
TRENCH WIDTH	:	0.70 m
TRENCH LENGTH	:	1.23 m
TRENCH BEARING	:	207°
TRENCH SLOPE	:	14°W

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-MB-TRC 82007

DRAWN BY: M. MILLARD	SCALE 1 : 50
LOGGED BY: M. MILLARD	DATE JULY / 82
APPROVED BY:	

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82007

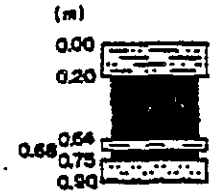
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.18	0.18			MUDSTONE	CARB.DK.GN CARB PLANT DEBRIS
	0.18	0.42	0.24			COAL	C-S.PWRD
	0.42	0.44	0.02			MUDSTONE	CARB COALY; RUBBLY
	0.44	0.99	0.55			COAL	C-S.PWRD
	0.99	1.23	0.24			MUDSTONE	SLTY.DK.GN CARB

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
0.51 / 0.55m

TRUE THICKNESS

ROCK	COAL
0.20m	
	0.44m
0.04m	
0.15m	0.07m



ROOF: 289° / 81° E

MUDSTONE

COAL: C-4

MUDSTONE
COAL: C-4
SILTSTONE

FLOOR: 287° / 75° E

FORMATION	:	GETHING
UTM COORDINATES	:	6169330 m N, 536 780 m E
MAP CARD NUMBER	:	930/9WL-1
AIR PHOTO NUMBER	:	BC 7190-155
TRENCH DEPTH	:	0.40 m
TRENCH WIDTH	:	0.50 m
TRENCH LENGTH	:	0.90 m
TRENCH BEARING	:	200°
TRENCH SLOPE	:	15°W

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG

GDR-MB-TRC 82008

DRAWN BY: M. MILLARD	SCALE 1:50
LOGGED BY: M. MILLARD	DATE JULY/82
APPROVED BY:	

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82008

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.20	0.20			MUDSTONE	SLTY.M.BN.THNB MNR PLANT DEBRIS
	0.20	0.64	0.44			COAL	C-4 BLOCKY; DAMP
	0.64	0.68	0.04			MUDSTONE	CARB.DK.BN FE STN.
	0.68	0.75	0.07			COAL	C-4 DAMP
	0.75	0.90	0.15			SILTSTONE	M.GY CARB PLANT DEBRIS; PLANT CASTS; SLIGHT FE STN.

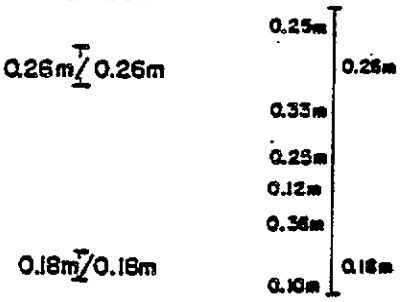
* DENOTES MEASURED BCA

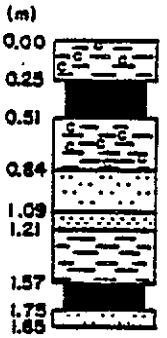
COAL/
COAL+ROCK

TRUE THICKNESS
ROCK COAL

0.26m / 0.26m

0.18m / 0.18m





ROOF: 307° / 75° E

MUDSTONE
COAL: C-5
MUDSTONE
SILTSTONE
SANDSTONE
MUDSTONE
COAL: C-5
SILTSTONE

FLOOR: 304° / 88° E

FORMATION	:	BRENOT
UTM COORDINATES	:	6169390 m N, 536 810 m E
MAP CARD NUMBER	:	930/9WL-1
AIR PHOTO NUMBER	:	BC-7190-155
TRENCH DEPTH	:	0.40 m
TRENCH WIDTH	:	0.70 m
TRENCH LENGTH	:	1.85 m
TRENCH BEARING	:	215°
TRENCH SLOPE	:	10° W

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG

GDR-MB-TRC 82009

DRAWN BY: M. MILLARD	SCALE 1:50
LOGGED BY: M. MILLARD	DATE JULY / 82
APPROVED BY:	

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRCB2009

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25			MUDSTONE	CARB.DK.GY SLIGHT FE STN.
	0.25	0.51	0.26			COAL	C-5.PWRD WET
	0.51	0.84	0.33			MUDSTONE	CARB.DK.BN WET; FRACTURED
	0.84	1.09	0.25			SILTSTONE	M.BN WET; FE STN.
	1.09	1.21	0.12			SANDSTONE	FG.LT.BN CARB PLANT DEBRIS; FE STN.
	1.21	1.57	0.36			MUDSTONE	SLTY.M.BN WET
	1.57	1.75	0.18			COAL	C-5 WET; BLOCKY
	1.75	1.85	0.10			SILTSTONE	M.BN WET; FE STN.

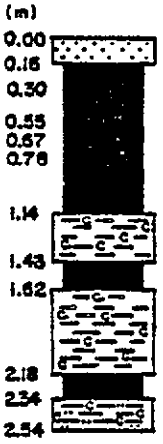
* DENOTES MEASURED BCA

COAL / COAL+ROCK
1.33/ 2.18 m

SAMPLE
00207

TRUE THICKNESS

ROCK	COAL
0.16m	
	0.14m
	0.25m
	0.12m
	0.11m
	0.36m
0.29m	
	0.19m
0.56m	
	0.16m
0.20	



ROOF: 291°/51° W

SANDSTONE

COAL: C-4

COAL: C-5

MUDSTONE

COAL: C-4

MUDSTONE

COAL: C-4

MUDSTONE

FLOOR: 303°/51° W

FORMATION	:	GETHING
UTM COORDINATES	:	6169690 m N, 536 920 m E
MAP CARD NUMBER	:	93O/9WL-1
AIR PHOTO NUMBER	:	BC 7190-155
TRENCH DEPTH	:	0.45 m
TRENCH WIDTH	:	0.35 m
TRENCH LENGTH	:	2.54 m
TRENCH BEARING	:	200°
TRENCH SLOPE	:	39° E

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-MB-TRC 82010

DRAWN BY: M. MILLARD	SCALE 1: 50
LOGGED BY: M. MILLARD	DATE JULY / 82
APPROVED BY:	

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PROJECT: GDR BLOCK: MB DATA SOURCE: IRC82010

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.16	0.16			SANDSTONE	MG.M.GY CACO3 VIENING
	0.16	0.30	0.14	00207		COAL	C-4.SHRD BRITTLE
	0.30	0.55	0.25	00207		COAL	C-4 BRITTLE. FE STN.
	0.55	0.67	0.12	00207		COAL	C-4.PWRD
	0.67	0.78	0.11	00207		COAL	C-4 FE STN.
	0.78	1.14	0.36	00207		COAL	C-5 HARD
	1.14	1.43	0.29			MUDSTONE	CARB.DK.GY POSSIBLY SLUMPED
	1.43	1.62	0.19			COAL	C-4 BLOCKY. BRITTLE
	1.62	2.18	0.56			MUDSTONE	CARB.DK.GY COALIFIED PLANT DEBRIS. FE STN.
	2.18	2.34	0.16			COAL	C-4 BRITTLE

* DENOTES MEASURED BCA

IXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82010

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.34	2.54	0.20			MUDSTONE	SLTY.DK.GY CARBONACEOUS; COALIFIED PLANT

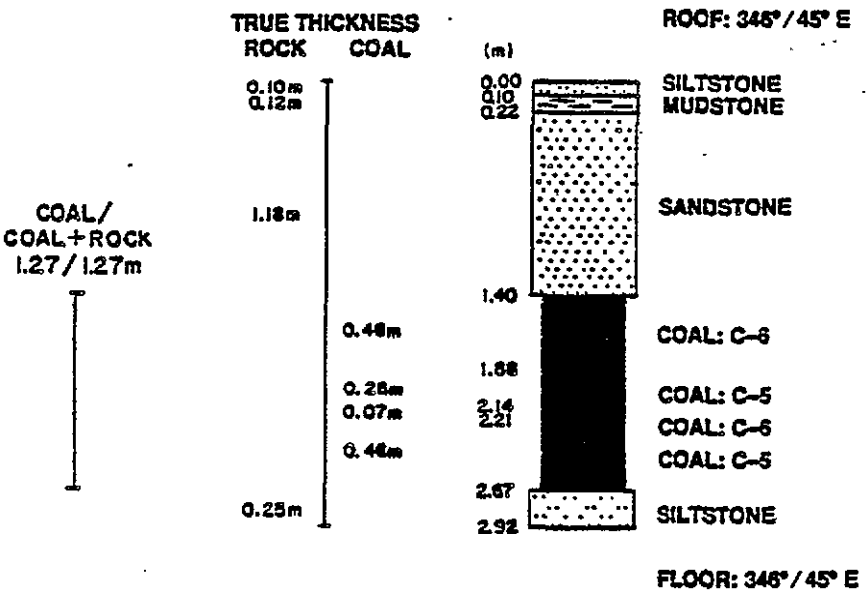
* DENOTES MEASURED BCA

GULF CANADA RESOURCES INC. - COAL DIVISION

29/OCT/82 HEAD ANALYSIS SUMMARY

Goodrich Hoberly ANALYSIS BASIS TYPE - AD NAME OF STANDARD - ASTM

DATA SOURCE	SEAM	SAMPLE ID	Residual MOISTURE%	ASH%	FIXED CARBON%	VOLATILE MATTER%	TOTAL SULPHUR%	GROSS CALORIFIC VALUE (MJ-KG)	SPG	FSI
TRC82010										
		207	0.96				0.63	32.43		0.50



FORMATION	:	GETHING
UTM COORDINATES	:	6170430 m N, 537 670 m E
MAP CARD NUMBER	:	930/9WL-1
AIR PHOTO NUMBER	:	BC 7190-108
TRENCH DEPTH	:	0.30 m
TRENCH WIDTH	:	0.50 m
TRENCH LENGTH	:	2.92 m
TRENCH BEARING	:	255°
TRENCH SLOPE	:	45° W

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG-

GDR-MB-TRC 82011

DRAWN BY: M. MILLARD	SCALE 1:50
LOGGED BY: M. MILLARD	DATE JULY/82
APPROVED BY:	

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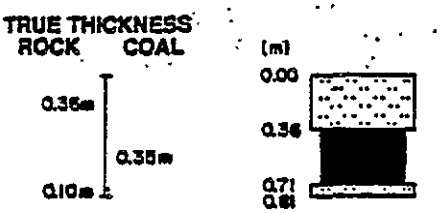
82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82011

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			SILTSTONE	M.GY
	0.10	0.22	0.12			MUDSTONE	CARB.DK.BN COALY PARTINGS
	0.22	1.40	1.18			SANDSTONE	FG.M.GY.THNB MICACEOUS
	1.40	1.88	0.48			COAL	C-6 RUBBLY
	1.88	2.14	0.26			COAL	C-5 BRITTLE
	2.14	2.21	0.07			COAL	C-6
	2.21	2.67	0.46			COAL	C-5.PWRD
	2.67	2.92	0.25			SILTSTONE	M.BN.THNB

* DENOTES MEASURED BCA

COAL/
COAL + ROCK
0.35/0.35m



ROOF: 272° / 06° S

SILTSTONE

COAL: C-6

MUDSTONE

FLOOR: 272° / 06° S

FORMATION	:	GETHING
UTM COORDINATES	:	6171400 m N, 538 415 m E
MAP CARD NUMBER	:	930/9WL-6
AIR PHOTO NUMBER	:	BC-7190-108
TRENCH DEPTH	:	0.30 m
TRENCH WIDTH	:	0.40 m
TRENCH LENGTH	:	0.81 m
TRENCH BEARING	:	180°
TRENCH SLOPE	:	84° N

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG

GDR-MB-TRC 82012

DRAWN BY: M. MILLARD	SCALE 1:50
LOGGED BY: M. MILLARD	DATE JULY / 82
APPROVED BY:	

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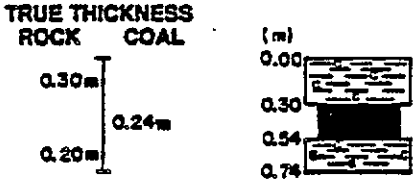
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82012

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.36	0.36			SILTSTONE	SSY.DK.GY WEATH BF UN.
	0.36	0.71	0.35			COAL	C-B.SHRD WET: MNR MUDST. LENSE (2CM)
	0.71	0.81	0.10			MUDSTONE	DK.BN RUBBLY

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
0.24/0.24m



ROOF: 343°/68° NE

MUDSTONE

COAL: C-3

MUDSTONE

FLOOR: 343°/68° NE

FORMATION	:	GETHING
UTM COORDINATES	:	6180450 m N, 539 150 m E
MAP CARD NUMBER	:	930/16WC-4
AIR PHOTO NUMBER	:	HA 80780-6-236
TRENCH DEPTH	:	0.1 m
TRENCH WIDTH	:	N/A
TRENCH LENGTH	:	0.74 m
TRENCH BEARING	:	253°
TRENCH SLOPE	:	22° SW

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG

GDR-MB-TRC 82013

DRAWN BY: D. FYVIE	SCALE 1:50
LOGGED BY: M. BESSO	DATE AUGUST/82
APPROVED BY: A.E.B	

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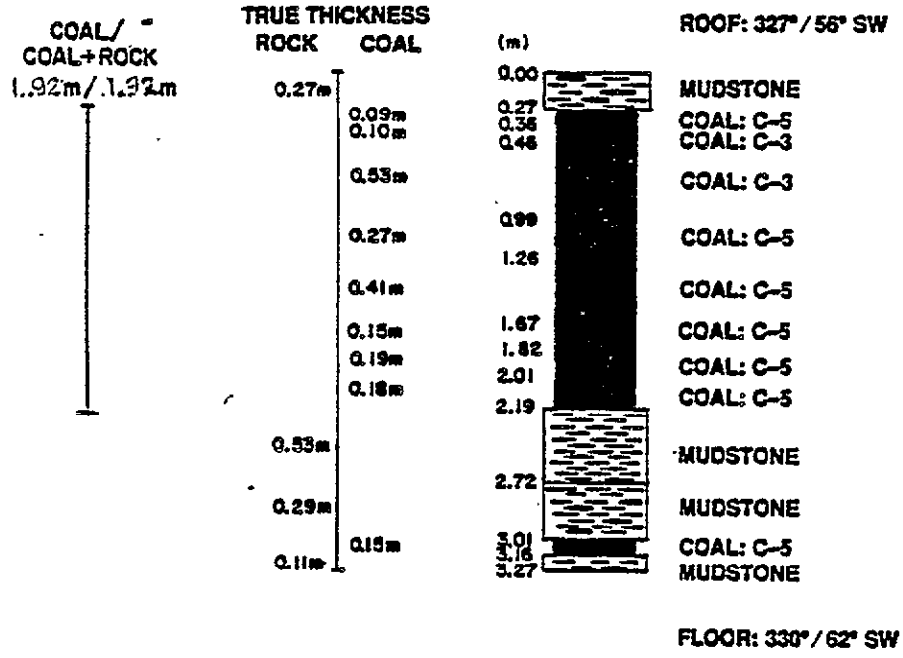
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82013

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			MUDSTONE	CARB.BLK WEATHERED DARK GREY. VERY FISSILE. COAL Y STRINGERS 1MM THICK 1CM LONG.
	0.30	0.54	0.24			COAL	C-3 BRITTLE. BREAKS IN CHUNKS. HARD
	0.54	0.74	0.20			MUDSTONE	CARB.DK.GY WEATHERED BROWN GREY. RUBBLY. CARBONACEOUS PLANT FRAGMENTS.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6179900 m N, 538 040 m E
MAP CARD NUMBER	:	930/16W
AIR PHOTO NUMBER	:	HA 80780-6-235
TRENCH DEPTH	:	1.70 m
TRENCH WIDTH	:	2.40 m
TRENCH LENGTH	:	3.27 m
TRENCH BEARING	:	201°
TRENCH SLOPE	:	35° NE

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-MB-TRC 82014

DRAWN BY: M. MILNE	SCALE 1:50
LOGGED BY: D. INKSTER	DATE JULY / 82
APPROVED BY: A. E. B.	

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRCB2014

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.27	0.27			MUDSTONE	CARB.DK.GY.THNB MINOR COALY LAMINATIONS. MINOR IRON STA IN. RUBBLY.
	0.27	0.36	0.09			COAL	C-5 THIN MUDSTONE PARTINGS
	0.36	0.46	0.10			COAL	C-3
	0.46	0.99	0.53			COAL	C-3 HARD. BLOCKY. WITH THIN COALY BANDS OF C-1. HEAVILY IRON STAINED.
	0.99	1.26	0.27			COAL	C-5 FIRM. PLATY. SHEARED ?. WET
	1.26	1.67	0.41			COAL	C-5 INTERBEDDED WITH SOME C-2. BREAKS CONCH OIDALLY.
	1.67	1.82	0.15			COAL	C-5 HARD.
	1.82	2.01	0.19			COAL	C-5 SEMI-HARD. CRUMBLY. SHEARED.
	2.01	2.19	0.18			COAL	C-5 HEAVILY IRON STAINED. POWDERY. WET.

* DENOTES MEASURED BCA

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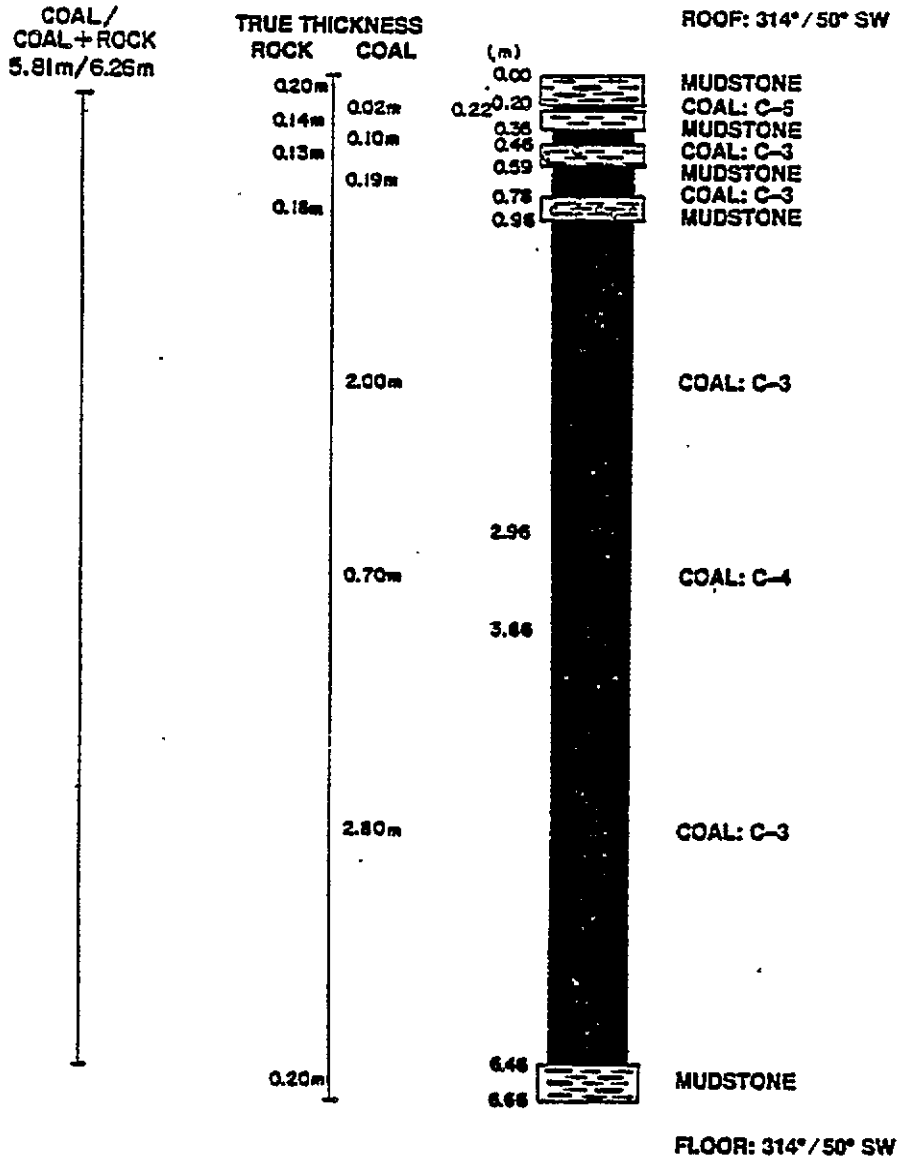
PROJECT: GDR BLOCK: MU DATA SOURCE: TRC82014

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.19	2.72	0.53			MUDSTONE	FER.M.GY.VTHNB RUBBLY.
	2.72	3.01	0.29			MUDSTONE	CARB.DK.GY COALY LAMINATIONS. RUBBLY.
	3.01	3.16	0.15			COAL	C->B SOFT. POWDERY.
	3.16	3.27	0.11			MUDSTONE	FER.M.GY.VTHNB SLICKENSIDES ?

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6161450 m N, 541 580 m E
MAP CARD NUMBER	:	930/9W
AIR PHOTO NUMBER	:	HA 131080-5-047
TRENCH DEPTH	:	~~6.66~~ m 4m
TRENCH WIDTH	:	0.5 m
TRENCH LENGTH	:	~~0.4~~ m (10) 6.66
TRENCH BEARING	:	224°
TRENCH SLOPE	:	40° NE

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-MB-TRC 82015

DRAWN BY: M. MILNE	SCALE 1:50
LOGGED BY: M. BESSO	DATE AUGUST/82
APPROVED BY: A.E.B.	

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82015

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.20	0.20			MUSDT	CARB.M.GY WEATHERS LIGHT GREY; HARD; CONCHOIDAL F RACTURE; RUBBLY; FINE SHINY COAL FRAGME NTS.
	0.20	0.22	0.02			COAL	C-5
	0.22	0.36	0.14			MUDSTONE	FER.M.GY WEATHERS RUSTY.
	0.36	0.46	0.10			COAL	C-4 BREAKS IN SMALL CUBES.
	0.46	0.59	0.13			MUDSTONE	CARB.M.GY WEATHERS MEDIUM GREY. COALIFIED PLANT F RAGMENTS. RUBBLY. FISSILE.
	0.59	0.78	0.19			COAL	C-3 BRIGHT BANDED
	0.78	0.96	0.18			MUDSTONE	CARB ALMOST C-6.
	0.96	2.96	2.00			COAL	HARD; BREAKS IN CUBES; SOME MUDSTONE PA RTINGS.

* DENOTES MEASURED BCA

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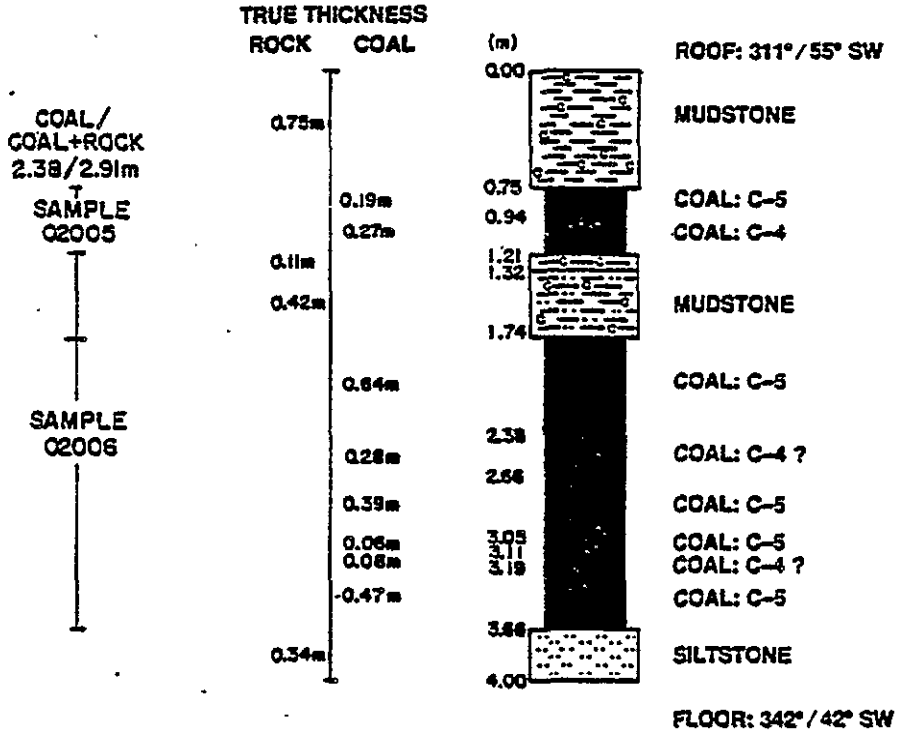
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82015

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.96	3.66	0.70			COAL	C-4 BRITTLE; DULL WITH BRIGHT BANDS.
	3.66	6.46	2.80			COAL	C-3 BRIGHT; SOFT; BREAKS IN LITTLE CUBES; M INOR MUDSTONE PARTING.
	6.46	6.66	0.20			MUDSTONE	CARB.DK.GY ALMOST TOTALLY COMPOSED OF PLANT FRAGME NTS; SLIGHTLY FERRUGINOUS.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6175050 m N, 540 600 m E
MAP CARD NUMBER	:	93 0/9 WK-9
AIR PHOTO NUMBER	:	HA 81080-6-234
TRENCH DEPTH	:	ROAD CUTBANK EXPOSURE
TRENCH WIDTH	:	ROAD CUTBANK EXPOSURE
TRENCH LENGTH	:	4.00 m
TRENCH BEARING	:	237°
TRENCH SLOPE	:	-41° E

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-MB-TRC 82016

DRAWN BY: J.HEIDEMA
LOGGED BY: V. ODEGAARD
APPROVED BY:
SCALE 1:50
DATE AUG./82

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82/10/21 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82016

MCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.75	0.75			MUDSTONE	M.GY MEDIUM GREY; WEATHERS LIGHT GRLY-RUSTY BROWN AT TOP; CARBONACEOUS PLANT FRAGMENTS; POSSIBLE ROOTLETS; CARBONACEOUS SHALE PARTS; < 1CM IRONSTONE BANDS; RUBBLY-CRUMBLY.
	0.75	0.94	0.19	02005		COAL	C-5 POWDERY-CRUMBLY.
	0.94	1.21	0.27	02005		COAL	C-4 C-4 ? CRUMBLY-POWDERY.
	1.21	1.32	0.11			MUDSTONE	CARB CARBONACEOUS; THIN BRIGHT COAL STRINGERS; CARBONACEOUS PLANT DEBRIS; SOFT CRUMBLY.
	1.32	1.74	0.42			MUDSTONE	SLTY.LT.GY SILTY; LIGHT GREY; WEATHERS BUFF-SLIGHTLY RUSTY; MINOR PLANT FOSSILS; MINOR CARBONACEOUS RESIDUE ON SMALL PLANT CASTS; VERY CARBONACEOUS TOWARDS BASE; RUBBLY.
	1.74	2.38	0.64	02006		COAL	C-5 SOFT. CRUMBLY. POWDERY. SHEARING EVIDENT. TRACES OF BRIGHT COAL STRINGERS (< 1 MM)

0 DENOTES MEASURED MCA

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PROJECT: GDR BLOCK: M6 DATA SOURCE: TRC82016

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.38	2.66	0.28	02006		COAL	C-4 C-4 ? SOFT. CRUMBLY-POWDERY.
	2.66	3.05	0.39	02006		COAL	C-5 SHEARED. SOFT. RUBBLY-POWDERY.
	3.05	3.11	0.06	02006		COAL	C-5 SOFT. POWDERY. SHEARED.
	3.11	3.19	0.08	02006		COAL	C-4 C-4 ? SOFT. POWDERY. SHEARED.
	3.19	3.66	0.47	02006		COAL	C-5 SOFT. POWDERY & SHEARED. TRACES OF BRIG HT COAL STRINGERS.
	3.66	4.00	0.34			SILTSTONE	M.GY CARBONACEOUS PLANT FRAGMENTS (MISPS). S LIGHTLY MICACEOUS. IRON STAINED.

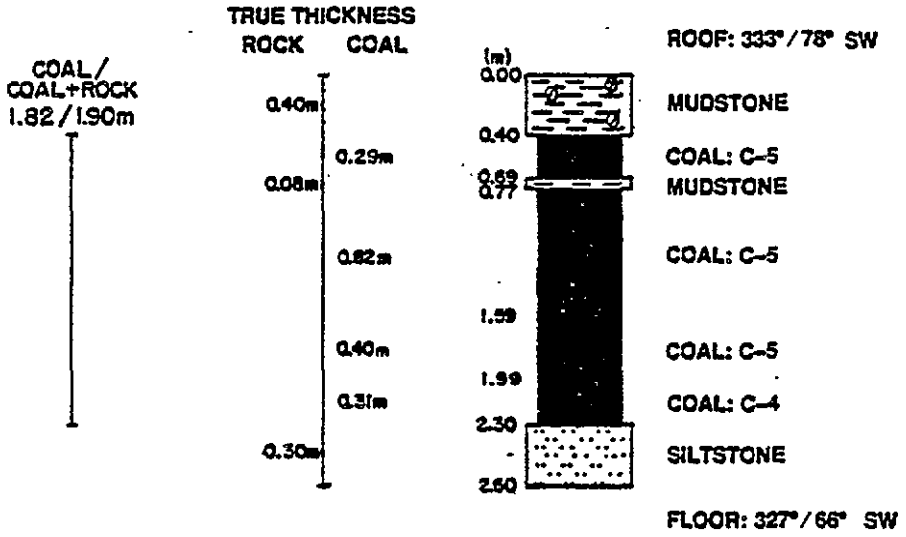
* DENOTES MEASURED BCA

GULF CANADA RESOURCES INC. - COAL DIVISION

29/OCT/82 HEAD ANALYSIS SUMMARY

Goodrich Hoberly ANALYSIS BASIS TYPE - AD NAME OF STANDARD - ASTM

DATA SOURCE	SEAM	SAMPLE ID	Residual MOISTURE%	ASH%	FIXED CARBON%	VOLATILE MATTER%	TOTAL SULPHUR%	GROSS CALORIFIC VALUE (MJ-KG)	SPG	FSI
TRC82016										
		2005	7.09	11.99	51.37	29.55	0.45	21.95	1.46	0.00
		2006	7.72	10.46	52.82	26.96	0.35	21.80	1.46	0.00



FORMATION	:	OLDMAN
UTM COORDINATES	:	6174880 m N, 540460 m E
MAP CARD NUMBER	:	93 0/9 WK-9
AIR PHOTO NUMBER	:	HA 81080-6-234
TRENCH DEPTH	:	CUT BANK EXPOSURE
TRENCH WIDTH	:	CUT BANK EXPOSURE
TRENCH LENGTH	:	2.60 m
TRENCH BEARING	:	240°
TRENCH SLOPE	:	-72° E

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-MB-TRC 82017

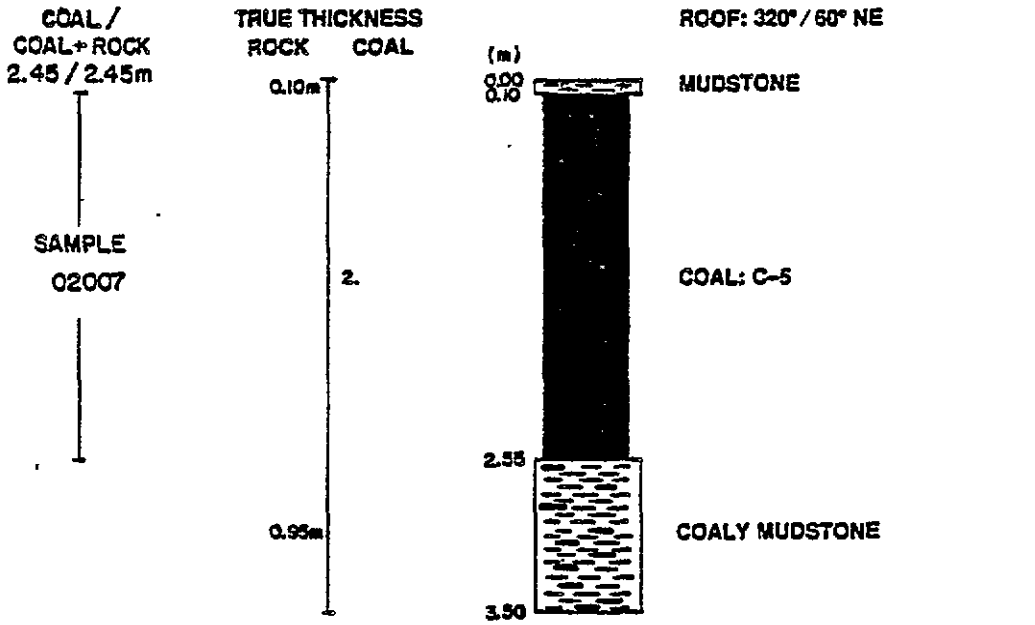
DRAWN BY: J. HEIDEMA	SCALE 1:50
LOGGED BY: V. ODEGAARD	DATE AUG. /82
APPROVED BY:	

:XXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82017

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.40	0.40			MUDSTONE	M.GY RUBBLY + SOFT. TRACES OF CARBONACEOUS P LANT REMAINS.
	0.40	0.69	0.29			COAL	C-5 SOFT. POWDERY-CRUMBLY. TRACE OF BRIGHT COAL STRINGERS
	0.69	0.77	0.08			MUDSTONE	CARB.DK.GY CARBONACEOUS DARK GREY. THIN COALY PART INGS
	0.77	1.59	0.82			COAL	C-5 SOFT. POWDERY. TRACES OF BRIGHT COAL ST RINGERS
	1.59	1.99	0.40			COAL	C-5 BRITTLE CRUMBLY
	1.99	2.30	0.31			COAL	C-4 C-4 ? BRITTLE. CRUMBLY
	2.30	2.60	0.30			SILST	CARB.M.GY MEDIUM GREY. CARBONACEOUS FLECKS

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6170700 m N, 538 920 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	HA 131080-5-11
TRENCH DEPTH	:	1.00 m
TRENCH WIDTH	:	0.40 m
TRENCH LENGTH	:	3.50 m
TRENCH BEARING	:	230°
TRENCH SLOPE	:	30° SW

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-MB-TRC 82018

DRAWN BY: G. THOMSON	SCALE 1 : 50
LOGGED BY: M. BESSO	DATE AUG. 82
APPROVED BY:	

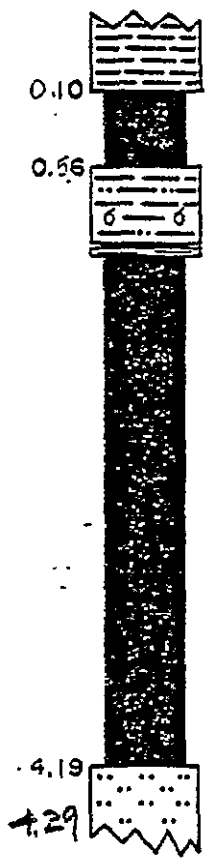
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC82018

HCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB V RUBBLY. CLAYEY.
	0.10	2.55	2.45	02007		COAL	C-5 RANGES FROM SOFT. DULL. POWDERY TO HARD . BLOCKY
	2.55	3.50	0.95	02007		MUDSTONE	CARB.DK.GY COALY. EXTREMELY WEATHERED. ABNT COALY PLT FRAGS AND CARB HASH.

TRUE THICKNESS

ROCK	COAL
0.10	
	0.46m
0.45m	
0.04m	0.02m
	0.43m
	0.33m
	0.52m
	0.11m
	1.09m
	0.64m
0.10	

COAL/ COAL+ROCK 3.60 / 4.09m



ROOF: 343° / 62° SW

MUDSTONE:	fissile, grey brown on weathered surface with coaly plant fragments, iron staining, same colour for fresh surf., mudstone is carbonaceous in places with thin carb. lenses
COAL:	weathered, dull and soft
COAL:	dull with minor bright bands and carb. claystone lenses with bright coal in thin slivers 1–2 mm thick
MUDSTONE:	with plant fragments and slightly silty., light grey to grey brown
COAL:	powdery, dull, weathered
CLAYSTONE:	carbonaceous
COAL:	weathered, bright ?, sheared at top
COAL:	weathered, dull with few bright bands
COAL:	weathered, blocky dull with some thin bright coaly bands up to 3mm thick
COAL:	sheared zone
COAL:	weathered, dull, blocky
SILTSTONE:	argillaceous, medium grey, weathered, iron staining with minor carbonaceous lenses

FLOOR: 314° / 36° SW

FORMATION	:GETHING
UTM COORDINATES	:174 770 N, 540 755 E
MAP CARD NUMBER	:
AIR PHOTO NUMBER	:
TRENCH DEPTH	:0.31 m
TRENCH WIDTH	:0.53 m
TRENCH LENGTH	:4.62 m
TRENCH BEARING	:218 °
TRENCH SLOPE	:10 °

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
MB - 81 - 01

DRAWN BY:	S. BISHOP — SCALE 1:50
LOGGED BY:	BRAD DAVIDSON, HANS ZSCHACH: DATE OCT. / 1981
APPROVED BY:	H. ZSCHACH

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83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	FISSILE, GREY-BROWN ON WEATHERED SURFACES WITH COALY PLANT FRAGMENTS, IRON STAINING, SAME COLOUR FOR FRESH SURFACE, MUDSTONE IS CARBONACEOUS IN PLACES WITH THIN CARBONACEOUS LENSES. ROOF.
	0.10	0.56	0.46			COAL	C-5 WEATHERED, DULL AND SOFT, MINOR BRIGHT BANDS AND CARBONACEOUS CLAYSTONE LENSES WITH BRIGHT COAL IN THIN SLIVERS 1 TO 2 MM THICK.
	0.56	1.01	0.45			MUDSTONE	SLIGHTLY SILTY, PLANT FRAGMENTS, LIGHT GREY TO LIGHT BROWN.
	1.01	1.03	0.02			COAL	C-5 POWDERY, WEATHERED.
	1.03	1.07	0.04			CLAYSTONE	CARB
	1.07	1.50	0.43			COAL	C-1 SHEARED AT TOP.
	1.50	1.83	0.33			COAL	C-5 WITH FEW BRIGHT BANDS, WEATHERED.
	1.83	2.35	0.52			COAL	WEATHERED, BLOCKY, DULL WITH SOME THIN BRIGHT COALY BANDS UP TO 3 MM THICK.

* DENOTES MEASURED BCA

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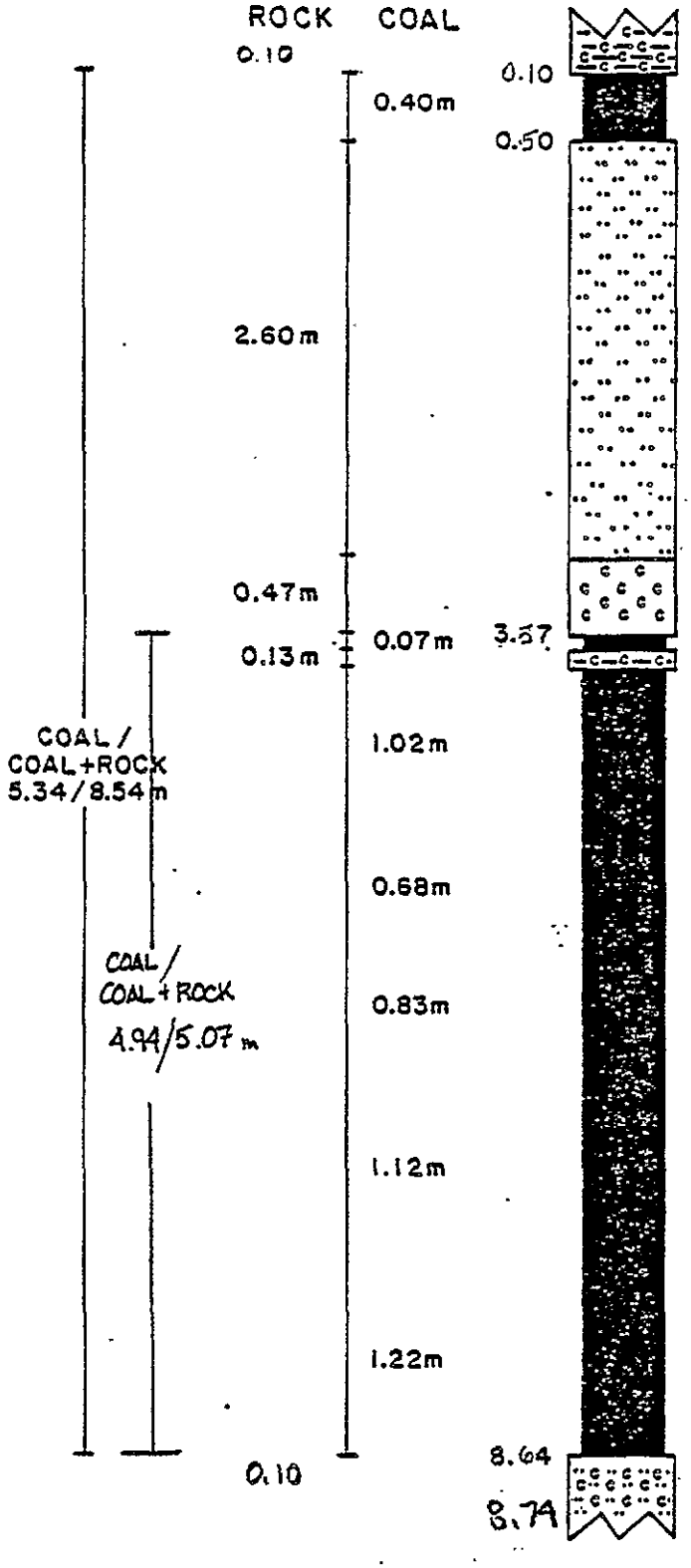
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.35	2.46	0.11			COAL	AS ABOVE.
	2.46	3.55	1.09			COAL	SHRD
	3.55	4.19	0.64			COAL	C-5 WEATHERED, BLOCKY.
	4.19	4.68	0.49			SILTSTONE	M.GY ARGILLACEOUS, WEATHERED, IRON STAINING, MINOR CARBONACEOUS LENSES. FLOOR.

* DENOTES MEASURED BCA



ROOF: 340°/60° SW

MUDSTONE:	fissile, weathered grey brown, carbonaceous plant fragments, iron staining
COAL:	dull, weathered, soft, sheared, minor bright bands
SILTSTONE:	light grey carbonaceous plant fragments, minor mudstone interbedding, flaggy, iron staining
MUDSTONE:	silty grey carbonaceous plant fragments, iron staining
COAL:	dull, weathered, soft
MUDSTONE:	dark grey silty carbonaceous plant fragments, iron staining
COAL:	dull, weathered, soft, powdery
COAL:	dull, sheared
COAL:	dull, weathered, soft, minor bright bands
COAL:	dull, weathered, soft, blocky
COAL:	dull, weathered, soft and wet
SILTSTONE:	grey, iron staining, carbonaceous plant fragments

FLOOR: 315°/38° SW

FORMATION :GETHING
UTM COORDINATES :174 800 N, 540 870 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH :0.70m
TRENCH WIDTH :0.75 m
TRENCH LENGTH :9.00 m
TRENCH BEARING :215°
TRENCH SLOPE :10°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
MB - 81 - 02

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: V. TAPLEY DATE OCT. /81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	FISSILE, WEATHERED GREY-BROWN, CARBONACEOUS PLANT FRAGMENTS, IRON STAINING. ROOF.
	0.10	0.50	0.40			COAL	C-5.SHRD WEATHERED, SOFT, MINOR BRIGHT BANDS.
	0.50	3.10	2.60			SILTSTONE	LT.GY CARBONACEOUS PLANT FRAGMENTS, MINOR MUDSTONE INTERBEDDING, FLAGGY, IRON STAINING.
	3.10	3.57	0.47			MUDSTONE	SLTY.GY CARBONACEOUS PLANT FRAGMENTS, IRON STAINING.
	3.57	3.64	0.07			COAL	C-5 WEATHERED SOFT.
	3.64	3.77	0.13			MUDSTONE	SLTY.DK.GY CARBONACEOUS PLANT FRAGMENTS, IRON STAINING.
	3.77	4.79	1.02			COAL	C-5 WEATHERED, SOFT, POWDERY.
	4.79	5.47	0.68			COAL	C-5.SHRD

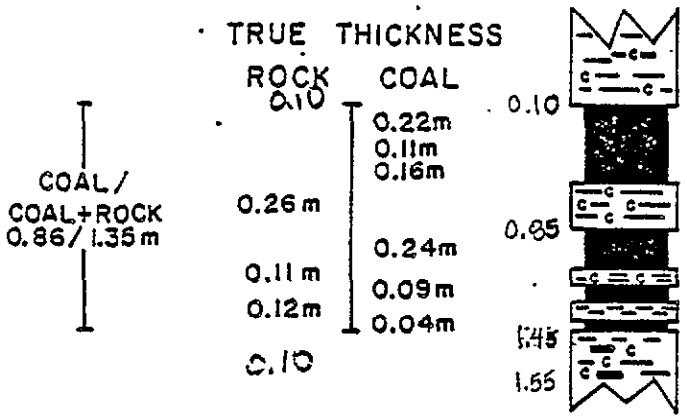
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	5.47	6.30	0.83			COAL	C-5 WEATHERED, SOFT, MINOR BRIGHT BANDS.
	6.30	7.42	1.12			COAL	C-5 WEATHERED, SOFT, BLOCKY.
	7.42	8.64	1.22			COAL	C-5 WEATHERED, SOFT AND WET.
	8.64	8.74	0.10			SILTSTONE	GY IRON STAINING, CARBONACEOUS PLANT FRAGMENTS. FLOOR.

* DENOTES MEASURED BCA



ROOF: 322°/60° S.W.

MUDSTONE:	coaly, gy fresh with coal partings, weathered reddish brown
COAL:	bright, brittle, sheared, hard
COAL:	dull, blocky, hard
COAL:	sheared, bright, brittle
MUDSTONE:	very carbonaceous
COAL:	bright, hard
MUDSTONE:	carbonaceous
COAL:	bright, shiney, with iron staining
MUDSTONE:	medium grey
COAL:	bright, brittle
MUDSTONE:	carbonaceous with coal partings

FLOOR: 322°/60° S.W.

FORMATION :GETHING
UTM COORDINATES :171 020 N, 538 325 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :HAI31080 - 4 - 43 (1:30000)
TRENCH DEPTH :0.18 m
TRENCH WIDTH :0.31 m
TRENCH LENGTH :1.62 m
TRENCH BEARING :232 °
TRENCH SLOPE :0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

MB - 81 - 03

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: S. DAVIDSON :DATE OCT./81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	GY COALY, COAL PARTINGS, WEATHERED REDDISH BROWN. ROOF.
	0.10	0.32	0.22			COAL	C-1.SHRD BRITTLE, HARD.
	0.32	0.43	0.11			COAL	C-5 BLOCKY, HARD.
	0.43	0.59	0.16			COAL	C-1.SHRD BRITTLE.
	0.59	0.85	0.26			MUDSTONE	CARB
	0.85	1.09	0.24			COAL	C-1 HARD.
	1.09	1.20	0.11			MUDSTONE	CARB
	1.20	1.29	0.09			COAL	C-1 SHINEY WITH IRON STAINING.
	1.29	1.41	0.12			MUDSTONE	M.GY

* DENOTES MEASURED BCA

XXXXX

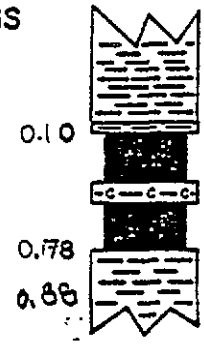
PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	1.41	1.45	0.04			COAL	C-1 BRITTLE.
	1.45	1.55	0.10			MUDSTONE	CARB WITH COAL PARTINGS. FLOOR.

* DENOTES MEASURED BCA

COAL / COAL+ROCK 0.57/0.68m

TRUE THICKNESS ROCK	TRUE THICKNESS COAL
0.10	
	0.29m
0.11	
	0.07m
	0.21m
0.10	



ROOF: 236°/19° S E

MUDSTONE: grey, fresh, and grey-brown weathered surface

MUDSTONE: carbonaceous
COAL: blocky, dull

MUDSTONE: carbonaceous
COAL: dull and powdery
COAL: bright, brittle and sheared

MUDSTONE

FLOOR: 236°/19° S E

FORMATION :GETHING
UTM COORDINATES :171 215 N, 538 460 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :HA131080 - 4 - 43 (1:30000)
TRENCH DEPTH :0.14 m
TRENCH WIDTH :0.33 m
TRENCH LENGTH ~~0.88 m~~
TRENCH BEARING :146°
TRENCH SLOPE :0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

MB - 81 - 04

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: B. DAVIDSON DATE OCT. / 81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRCB1004

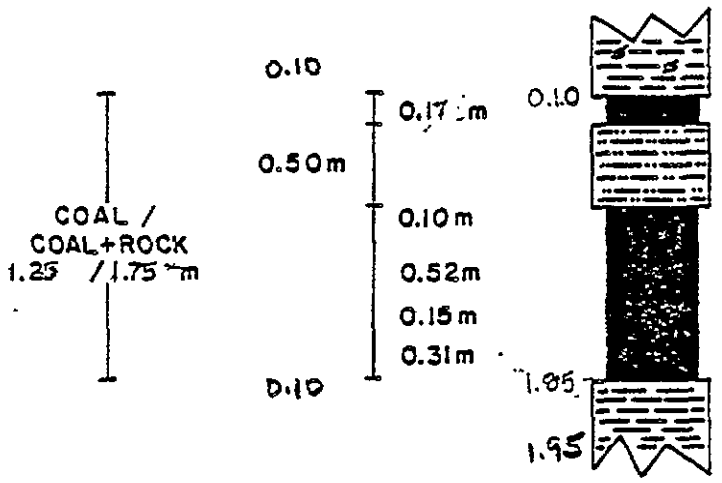
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	GY WEATHERED GREY-BROWN.
	0.10	0.13	0.03			MUDSTONE	CARB ROOF.
	0.13	0.42	0.29			COAL	C-5 BLOCKY.
	0.42	0.53	0.11			MUDSTONE	CARB
	0.53	0.60	0.07			COAL	C-5 POWDERY.
	0.60	0.81	0.21			COAL	C-1.SHRD BRITTLE. SHEARED
	0.81	0.91	0.10			MUDSTONE	FLOOR.

* DENOTES MEASURED BCA

TRUE THICKNESS

ROCK COAL

ROOF: 325°/83°W



MUDSTONE:	with carbonaceous plant fragments, dark brown
COAL:	dull, brittle
MUDSTONE:	silty
COAL:	dull and blocky with brittle lenses
COAL:	dull, blocky and brittle with bright lenses
COAL:	bright, hard and wet
COAL:	dull and blocky
MUDSTONE:	grey, fissile, flakey
MUDSTONE:	medium brown

FLOOR: 325°/83°W

FORMATION : GETHING
UTM COORDINATES : 176 310 N, 541 500 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.15 m
TRENCH WIDTH : 0.75m
TRENCH LENGTH : 2.2 m
TRENCH BEARING : 233°
TRENCH SLOPE : 0 °

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

MB - 81 - 05

DRAWN BY: M. ANDERSON SCALE 1: 50
LOGGED BY: J.B. DAVIDSON DATE OCT. / 81
APPROVED BY: H. ZSCHACH

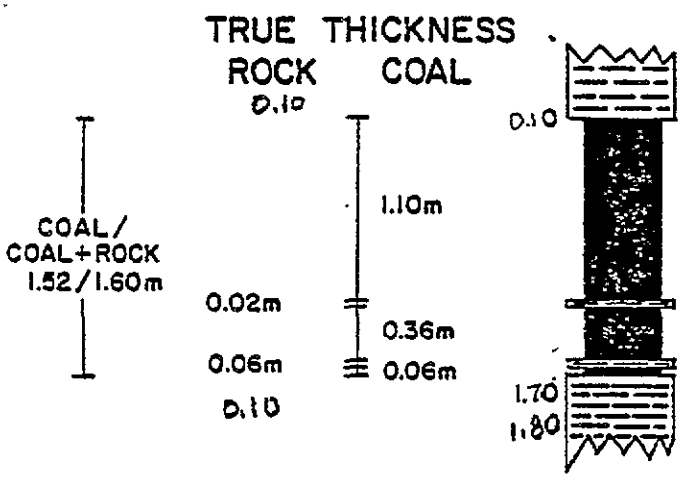
XXXXX

83/06/03 GULF CANADA RESOURCES.INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.BN WITH CARBONACEOUS PLANT FRAGMENTS. ROOF
	0.10	0.27	0.17			COAL	C-5 BRITTLE.
	0.27	0.77	0.50			MUDSTONE	SLTY
	0.77	0.87	0.10			COAL	C-5 BLOCKY WITH BRITTLE LENSES.
	0.87	1.39	0.52			COAL	C-5 BLOCKY AND BRITTLE WITH BRIGHT LENSES.
	1.39	1.54	0.15			COAL	C-1 HARD AND WET.
	1.54	1.85	0.31			COAL	C-5 BLOCKY.
	1.85	1.93	0.08			MUDSTONE	GY FISSILE, FLAKEY. FLOOR.
	1.93	2.03	0.10			MUDSTONE	M.BN

* DENOTES MEASURED BCA



ROOF: 336° / 85° W

MUDSTONE:	light grey turning to light brown, mudstone further up section
COAL:	dull and powdery
MUDSTONE:	dark grey
COAL:	dull, powdery
MUDSTONE:	dark grey
COAL:	dull, powdery
MUDSTONE:	grey, slightly fissile

FLOOR: 336° / 85° W

FORMATION :GETHING
UTM COORDINATES :176 035 N, 541 350 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH :0.10 m
TRENCH WIDTH :0.12 m
TRENCH LENGTH :1.80 m
TRENCH BEARING :216 °
TRENCH SLOPE :0 °

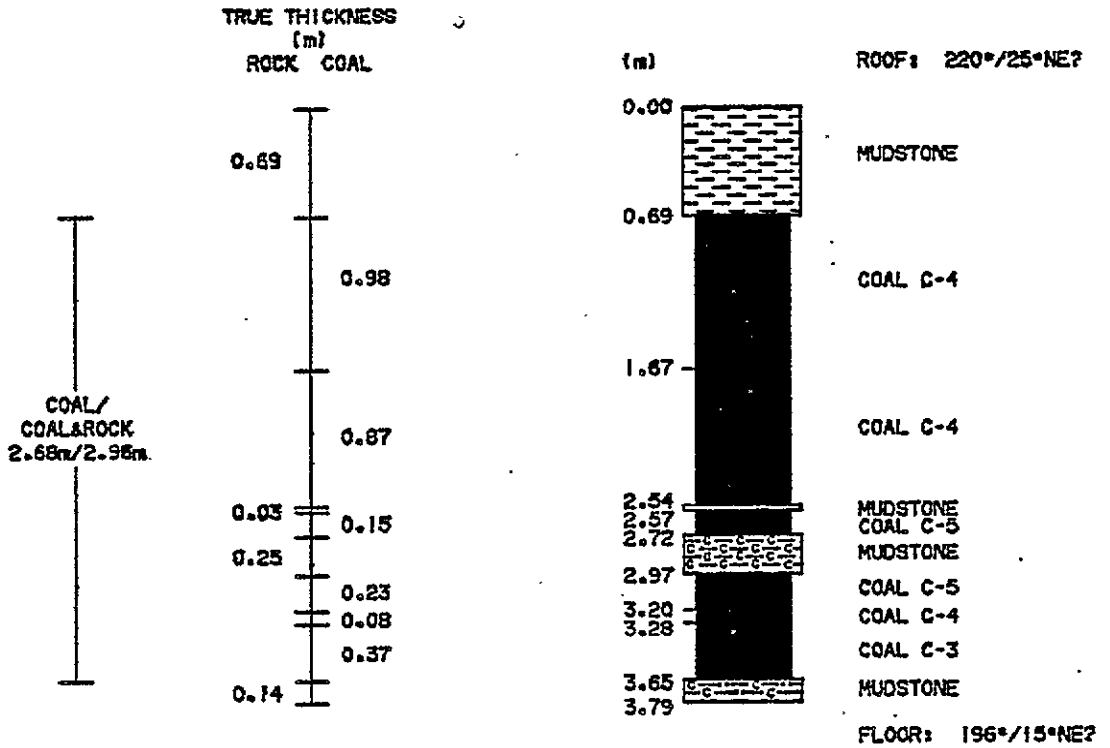
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

MB - 81 - 06

DRAWN BY: B. BISHOP SCALE 1:50
LOGGED BY: J. BRAD DAVIDSON DATE OCT./1981
APPROVED BY H. ZSCHACH



FORMATION	:	GETHING
UTM COORDINATES	:	6127870mN, 572080mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7193-127
TRENCH DEPTH	:	2.5m
TRENCH WIDTH	:	1.0m
TRENCH LENGTH	:	6.40m 3.79
TRENCH BEARING	:	260°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

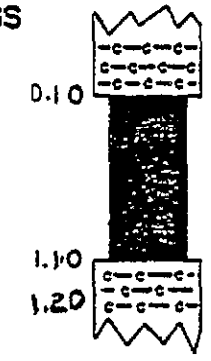
GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-GS-TRC-83001

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: M. MILNE	DATE: 20/07/83
APPROVED BY: V. DUFORD	

COAL/
COAL+ROCK
1.00/1.00m

TRUE THICKNESS

ROCK	COAL
0.10	
	0.58m
	0.42m
0.10	



ROOF: 319° /34° SW

MUDSTONE:	dark grey, carbonaceous, well broken, weathered light grey
COAL:	soft, very weathered, packed, infrequent bright lenses, damp
COAL:	very clayey, borderline mudstone with much coaly laminations, very well weathered, thin flat pieces, very crumbly, infrequent bright bands
MUDSTONE:	well weathered, easily broken, fissile, carbonaceous, fresh: dark grey, weathered: light grey

FLOOR: 319° /34° SW

FORMATION :GETHING
UTM COORDINATES :171 270 N, 738 720 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH :0.31 m
TRENCH WIDTH :0.21 m
TRENCH LENGTH :1.32 m
TRENCH BEARING :193°
TRENCH SLOPE :11°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

MB-81-12

DRAWN BY: S. BISHOP	SCALE 1:50
LOGGED BY: ANDREA PETZOLD	DATE OCT./1981
APPROVED BY: H. ZSCHACH	

XXXXX

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81011

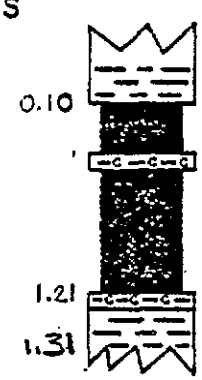
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.GY BROKEN, WELL WEATHERED. ROOF.
	0.10	0.39	0.29			COAL	BLOCKY, DULL WEATHERED.
	0.39	0.48	0.09			MUDSTONE	CARB.DK.GY.VBRKN
	0.48	0.61	0.13			COAL	SOFT, FISSILE, SOMEWHAT BRIGHT.
	0.61	0.91	0.30			COAL	C-4 SOFT.
	0.91	0.98	0.07			COAL	C-5 SOFT, POWDERED, ABUNDANT FINE RED STREAKS, MUDSTONE PIECES.
	0.98	1.21	0.23			COAL	C-5 SOFT, POWDERED.
	1.21	1.31	0.10			MUDSTONE	CARB.BN FEW COALY INCLUSIONS, WEATHERED VERY WELL. FLOOR.

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
1.02/1.11m

TRUE THICKNESS

ROCK	COAL
0.10	
	0.29m
0.09	
	0.13m
	0.30m
	0.07m
	0.23m
0.10	



ROOF: 328°/65°N.E.

MUDSTONE: dark grey, broken, well weathered

COAL: blocky, dull weathered

MUDSTONE: carbonaceous, dark grey, very broken

COAL: soft, fissile, somewhat bright

COAL: soft, dull, few bright bands

COAL: soft, dull, powdered, abundant fine red streaks, mudstone pieces

COAL: soft, powdered, dull

MUDSTONE: carbonaceous, few coaly inclusions

MUDSTONE: brown, weathered very well

FLOOR: 328°/65°N.E.

FORMATION :GETHING
UTM COORDINATES :170 700 N, 538 740 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH :0.20 m
TRENCH WIDTH :0.31 m
TRENCH LENGTH :1.31 m
TRENCH BEARING :238°
TRENCH SLOPE :0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

MB - 81 - 11

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: B. DAVIDSON DATE OCT./81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81010

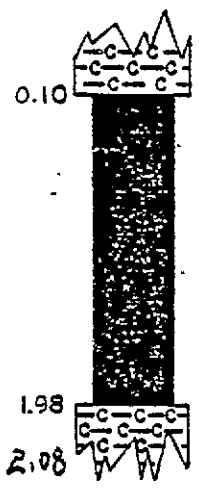
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY.VBRKN WEATHERED LIGHT BROWN. ROOF.
	0.10	0.63	0.53			COAL	C-5 WELL WEATHERED, BLOCKY, BROWN STAINING, BRITTLE
	0.63	0.90	0.27			COAL	BLOCKY, HARD, ABUNDANT BRIGHT BANDS, MODERATELY WEATHERED.
	0.90	1.04	0.14			COAL	POWDERY, FEW BRIGHT BANDS, SOFT.
	1.04	1.29	0.25			COAL	C-5 BLOCKY, HARD.
	1.29	1.98	0.69			COAL	BLOCKY, HARD, ABUNDANT BRIGHT BANDS, CLEAN.
	1.98	2.08	0.10			MUDSTONE	CARB.GY ABUNDANT PLANT HASH, GREY-BLACK. FLOOR.

* DENOTES MEASURED BCA

TRUE THICKNESS

ROCK	COAL
0.10	
	0.53 m
	0.27 m
	0.14 m
	0.25 m
	0.69 m
0.10	

COAL / COAL + ROCK 1.88 / 1.88



ROOF: 317°/36° SW

MUDSTONE:	carbonaceous, dark grey, very broken, weathered light brown
COAL:	well weathered, blocky, brown staining, dull, brittle
COAL:	blocky, hard, abundant bright bands, moderately weathered
COAL:	powdery, few bright bands, soft
COAL:	blocky, hard, dull
COAL:	blocky, hard, abundant bright bands, clean
MUDSTONE:	carbonaceous, abundant plant hash, grey-black

FLOOR: 317° / 36° SW

FORMATION : GETHING
UTM COORDINATES : 170 245 N, 538 860 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.24 m
TRENCH WIDTH : 0.32 m
TRENCH LENGTH : 2.08 m
TRENCH BEARING : 227°
TRENCH SLOPE : 0 °

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

MB - 81 - 10

DRAWN BY: S. DAMSTROM	SCALE 1 50
LOGGED BY: A. PETZOLD	DATE OCT. / 81
APPROVED BY: H. ZSCHACH	

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81009

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.63	3.85	0.22			COAL	C-5 SOFT, FINE BRIGHT PIECES, FLECKS, DAMP.
	3.85	4.06	0.21			MUDSTONE	CARB INTERBEDDED COAL, DULL, DIRTY, WELL WEA THERED, FISSILE.
	4.06	4.22	0.16			COAL	C-5.PWRD SOFT, DAMP.
	4.22	4.32	0.10			MUDSTONE	CARB.DK.BN VERY WELL WEATHERED, ABUNDANT PLANT FRA GMENTS + HASH THROUGHOUT. FLOOR.

* DENOTES MEASURED BCA

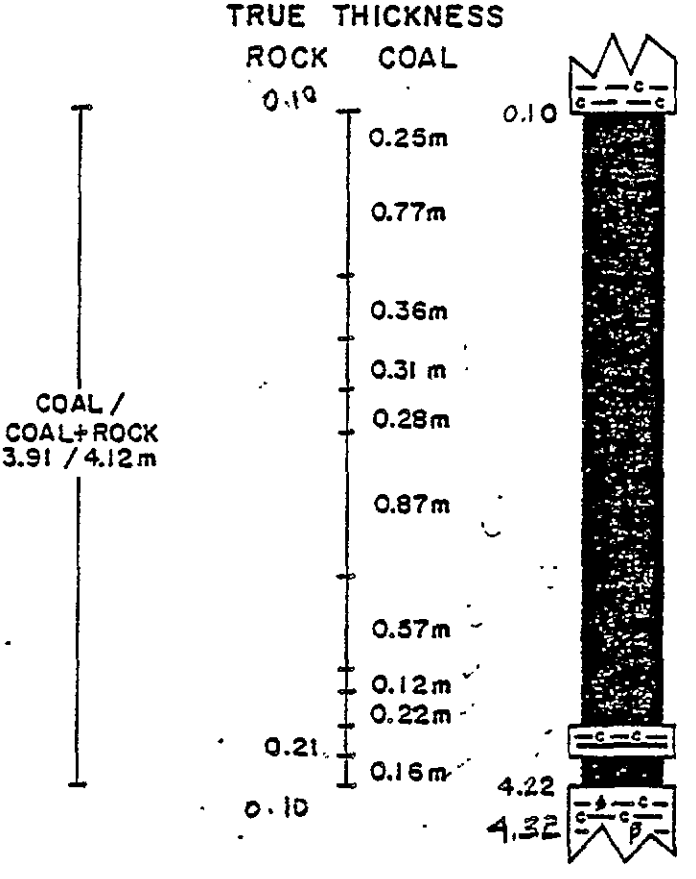
XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81009

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY SILTY, FRACTURED. ROOF.
	0.10	0.35	0.25			COAL	C-5.PWRD SOFT,DAMP.
	0.35	1.12	0.77			COAL	HARD, BRIGHT THIN STRINGERS, VERY WEATHERED.
	1.12	1.48	0.36			COAL	C-5 SOFT, DIRTY, WEATHERED.
	1.48	1.79	0.31			COAL	BLOCKY PIECES, EASILY BROKEN, WELL WEATHERED
	1.79	2.07	0.28			COAL	C-5 DAMP, SOFT.
	2.07	2.94	0.87			COAL	C-5 WELL WEATHERED, SOFT, INFREQUENT CHUNKS, EASILY BROKEN.
	2.94	3.51	0.57			COAL	C-5 HARD, BLOCKY PIECES, WELL WEATHERED.
	3.51	3.63	0.12			COAL	C-5 DIRTY, SOFT, WEATHERED ORANGE-BROWN THROUGHOUT, FREQUENT MUDSTONE PIECES.

* DENOTES MEASURED BCA



ROOF: 319°/ 60° N.E.

MUDSTONE:	dark grey, carbonaceous, silty, well fractured
COAL:	dull, powdery, soft, damp
COAL:	blocky, hard, bright thin stringers, very weathered
COAL:	dull, soft, dirty, weathered
COAL:	blocky pieces, easily broken, well weathered
COAL:	damp, dull, soft
COAL:	dull, well weathered, soft, infrequent chunks, easily broken
COAL:	dull, hard, blocky pieces, well weathered
COAL:	dull, dirty, soft, weathered orange-brown throughout, frequent mudstone pieces
COAL:	dull, soft, fine bright pieces, flecks, damp
MUDSTONE AND COAL:	dull, dirty, well weathered, carbonaceous, fissile
COAL:	dull, soft, powdery, damp
MUDSTONE:	very well weathered, dark brown, carbonaceous, abundant plant fragments + hash throughout

FLOOR: 319°/66° N.E.

FORMATION :GETHING
UTM COORDINATES :170 660 N, 578 750 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH :0.43 m
TRENCH WIDTH :0.62 m
TRENCH LENGTH :4.32 m
TRENCH BEARING :229°
TRENCH SLOPE :0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
MB - 81 - 09

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: A. PETZOLD DATE OCT. / 81
APPROVED BY H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRCB1008

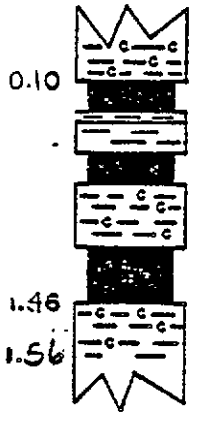
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY WEATHERED, FISSILE. ROOF.
	0.10	0.24	0.14			COAL	POWDERY,WET,MANY THIN BRIGHT BANDS.
	0.24	0.29	0.05			COAL	POWDERY, WET.
	0.29	0.54	0.25			ROCK	WEATHERED RUST-RED, POWDERY,CRUMBLY.
	0.54	0.75	0.21			COAL	C-1 AND DULL, BRIGHT, CRUMBLY, WEATHERED, F AIRLY HARD, WET.
	0.75	1.12	0.37			MUDSTONE	CARB GREY-BROWN, WEATHERED, CRUMBLY, WELL FR ACTURED, WELL BROKEN.
	1.12	1.46	0.34			COAL	C-5 FEW BRIGHT BANDS, WEATHERED, POWDERED, WET.
	1.46	1.56	0.10			MUDSTONE	CARB.DK.GY.VBRKN ABUNDANT PLANT FRAGMENTS, WET. FLOOR.

* DENOTES MEASURED BCA

COAL / COAL+ROCK .74 / 1.36m

TRUE THICKNESS

ROCK	COAL
0.10	
	0.14m
0.03	0.05m
0.22	
	0.21m
0.37	
	0.34m
0.10	



ROOF: 342°/30° N.E.

MUDSTONE:	carbonaceous, dark grey, weathered, fissile
COAL:	powdery, wet, many thin bright bands
COAL:	powdery, wet
ROCK:	weathered rust red, powdery, crumbly
COAL:	bright, crumbly, weathered, fairly hard, wet, dull
MUDSTONE:	mudstone: carbonaceous, grey-brown, weathered, crumbly, well fractured, well broken
COAL:	weathered, few bright bands, dull, powdered, wet
MUDSTONE:	carbonaceous, dark grey, abundant plant fragments, wet, very broken

FLOOR: 342°/30° N.E.

FORMATION : GETHING
UTM COORDINATES : 170 555 N, 538 750 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH : 0.34 m
TRENCH WIDTH : 0.27 m
TRENCH LENGTH : 1.73 m
TRENCH BEARING : 252 °
TRENCH SLOPE : 0 °

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

MB - 81 - 08

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: B. DAVIDSON DATE OCT. / 81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81007

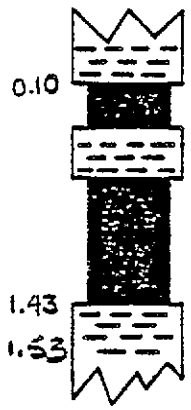
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.GY WELL WEATHERED, WELL FRACTURED, THIN BEDDING. ROOF.
	0.10	0.40	0.30			COAL	C-5 SOFT, POWDERY.
	0.40	0.68	0.28			MUDSTONE	DK.GY.BRKN FRACTURED, WEATHERED, OBSCURE CONTACTS.
	0.68	0.91	0.23			COAL	C-5 SOFT, POWDERY, SOFT CHUNKS.
	0.91	0.98	0.07			COAL	MUDDY, FLAT, FLAKEY PIECES, WELL WEATHERED, RUST BROWN, DAMP.
	0.98	1.43	0.45			COAL	SOFT, CRUMBLY CHUNKS.
	1.43	1.53	0.10			MUDSTONE	VERY WELL WEATHERED, ORANGE TO RUST-BROWN, WELL FRACTURED. FLOOR.

* DENOTES MEASURED BCA

COAL / COAL+ROCK 1.05 / 1.33m

TRUE THICKNESS

ROCK	COAL
0.10	
	0.30m
0.28	
	0.23m
	0.07m
	0.45m
0.10	



ROOF: 327°/34° N.E.

MUDSTONE:	dark grey, well weathered, well fractured, thin bedding
COAL:	dull, soft, powdery
MUDSTONE:	broken, fractured, dark grey, weathered, obscure contacts
COAL:	dull, soft, powdery soft chunks
COAL:	muddy, flat, flakey pieces, well weathered, rust brown, damp
COAL:	soft, crumbly chunks
MUDSTONE:	very well weathered, orange rust-brown, well fractured

FLOOR: 327°/34° N.E.

FORMATION :GETHING
UTM COORDINATES :170 510 N, 538 750 E
MAP CARD NUMBER :
AIR PHOTO NUMBER :
TRENCH DEPTH :0.45 m
TRENCH WIDTH :0.34 m
TRENCH LENGTH :1.7 m
TRENCH BEARING :237°
TRENCH SLOPE :0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

MB - 81 - 07

DRAWN BY: M. ANDERSON SCALE 1: 50
LOGGED BY A. PETZOLD DATE OCT. / 81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: MB DATA SOURCE: TRC81006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	LIGHT GREY TURNING TO BROWN FURTHER UP SECTION. ROOF.
	0.10	1.20	1.10			COAL	C-5 POWDERY.
	1.20	1.22	0.02			MUDSTONE	DK.GY
	1.22	1.58	0.36			COAL	C-5 POWDERY.
	1.58	1.64	0.06			MUDSTONE	DK.GY
	1.64	1.70	0.06			COAL	C-5 POWDERY.
	1.70	1.80	0.10			MUDSTONE	GY SLIGHTLY FISSILE. FLOOR.

* DENOTES MEASURED BCA

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.69	0.69			MUDSTONE	M.GY WTHRS BN, RUBBLY, FE STN. ROOF.
	0.69	1.67	0.98			COAL	C-4 HARD, DULL.
	1.67	2.54	0.87			COAL	C-4 SHRD, HARD.
	2.54	2.57	0.03			MUDSTONE	BN PTG, SOFT, DIRTY BN.
	2.57	2.72	0.15			COAL	C-5 SHRD, CRUMBLY, WET, V MNR FE STN ON SHR D SURFS.
	2.72	2.97	0.25			MUDSTONE	DK.GY INTBD W COAL, SHRD, MNR FE STN.
	2.97	3.20	0.23			COAL	C-5 BREAKS INTO CHUNKS, SOFT.
	3.20	3.28	0.08			COAL	C-4 MNR FE STN, MUDST STRGS, HARD, CRUMBLY.
	3.28	3.65	0.37			COAL	C-3 HARD, SHRD, BREAKS INTO CHUNKS.

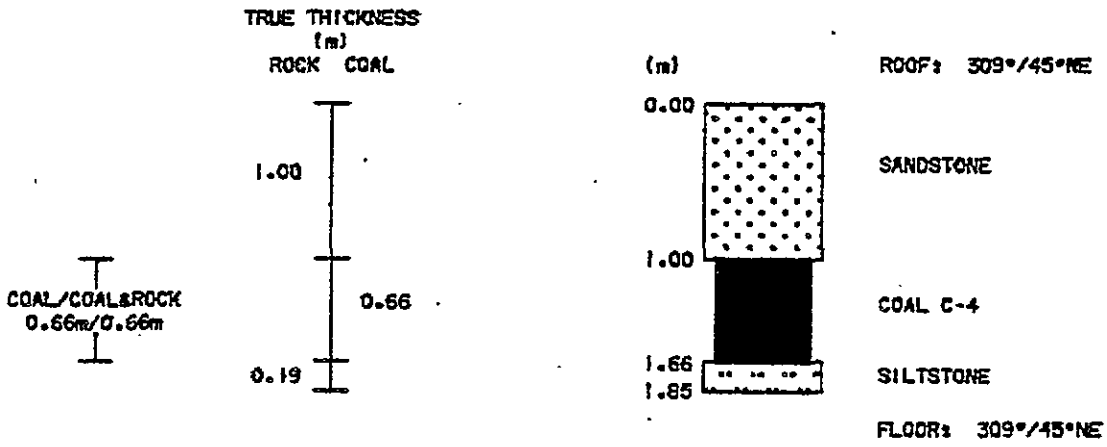
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.65	3.79	0.14			MUDSTONE	SLTY.DK.GY CARB, HEAVILY FE STN, SOFT, WTHRD RUSTY BN, FE ST CONC, PL FRAGS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	DRESSER
UTM COORDINATES	:	6129150mN, 567960mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7193-069
TRENCH DEPTH	:	0.5m
TRENCH WIDTH	:	0.3m
TRENCH LENGTH	:	1.85m
TRENCH BEARING	:	219°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-GS-TRC-83002

DRAWN BY: A. HOTYKA	SCALE: 1:50
LOGGED BY: M. HILNE	DATE: 23/07/83
APPROVED BY: V. DUFORD	

GDR:[205,571830586811.LOG

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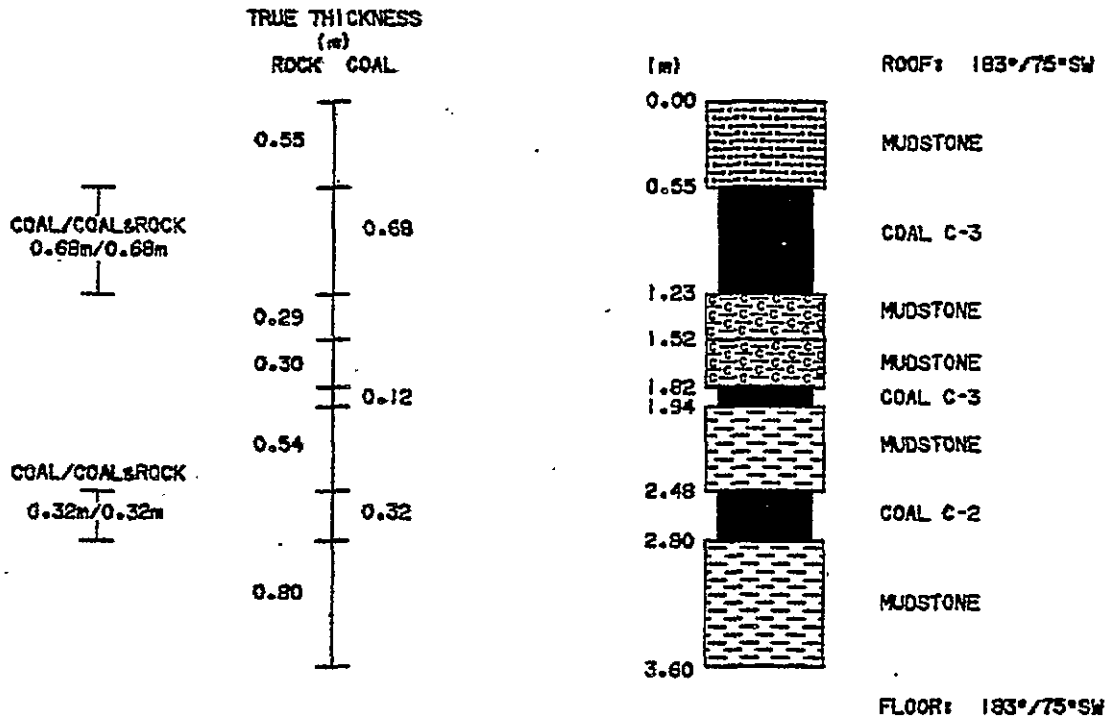
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.00	1.00			SANDSTONE	VCG.S-P.GY.THNB WTHRS BN GY, FE STN SPECKS, LARGE PL CA STS. ROOF.
	1.00	1.66	0.66			COAL	C-4 HARD, SHRD, BREAKS INTO LARGE SPLINTERS
	1.66	1.85	0.19			SILTSTONE	GY.THNB WTHRD BN GY, CARB ROOTLETS, CARB PL FRA GS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	DRESSER
UTM COORDINATES	:	6126212mN, 569931mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC. 7193-189
TRENCH DEPTH	:	0.7m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	3.60m
TRENCH BEARING	:	183°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-GS-TRC-83003

DRAWN BY: C. DOODINGS	SCALE: 1:50
LOGGED BY: D. INKSTER	DATE: 24/07/83
APPROVED BY: V. DUFORD	

GDR:[205.571830196011.LOG

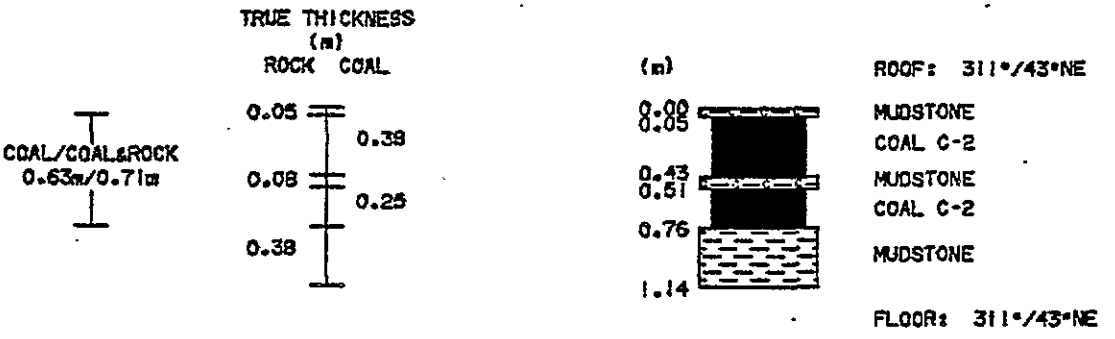
XXXXX .

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.55	0.55			MUDSTONE	SLTY.M-DK.GY FE STN, FREQ CARB. ROOF.
	0.55	1.23	0.68			COAL	C-3 HARD, SHRD.
	1.23	1.52	0.29			MUDSTONE	CARB.DK.GY V CARB, COALY STRGS.
	1.52	1.82	0.30			MUDSTONE	CARB.GY ABNT COALY STRGS, WTHRS LT BN.
	1.82	1.94	0.12			COAL	C-3 SHRD.
	1.94	2.48	0.54			MUDSTONE	DK.GY SOME WRMBUR.
	2.48	2.80	0.32			COAL	C-2 EXTREMELY SHRD.
	2.80	3.60	0.80			MUDSTONE	M.GY FREQ CARB PL DEBRIS, WTHRS ORNG BN. FLO OR. TRENCH APPEARS SLUMPED.

* DENOTES MEASURED BCA



FORMATION	:	DRESSER
UTM COORDINATES	:	6126157mN, 569817mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7193-189
TRENCH DEPTH	:	0.7m
TRENCH WIDTH	:	0.4m
TRENCH LENGTH	:	1.14m
TRENCH BEARING	:	131°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-GS-TRC-83004

DRAWN BY:	C. GOODINGS	SCALE: 1:50
LOGGED BY:	R. INKSTER	DATE: 24/07/83
APPROVED BY:	V. DUFORD	

GDR:E205.5718609860II.LOG

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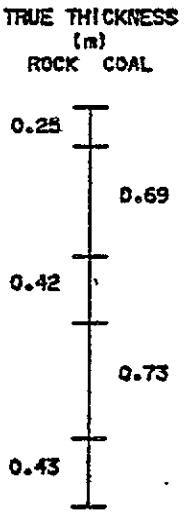
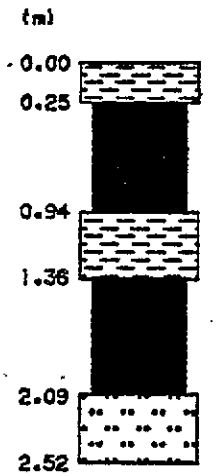
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.05	0.05			MUDSTONE	CARB.DK.GY FE STN ABNT. ROOF.
	0.05	0.43	0.38			COAL	C-2 V SHRD.
	0.43	0.51	0.08			MUDSTONE	CARB.DK.GY
	0.51	0.76	0.25			COAL	C-2 V SHRD.
	0.76	1.14	0.38			MUDSTONE	M.GY V FE STN. FLOOR.

* DENOTES MEASURED BCA





ROOF: 319°/60°NE

MUDSTONE

COAL C-3

MUDSTONE

COAL C-3

SILTSTONE

FLOOR: 319°/60°NE

FORMATION	:	BRENOT
UTM COORDINATES	:	6126010mN, 569345mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7193-189
TRENCH DEPTH	:	1.0m
TRENCH WIDTH	:	0.6m
TRENCH LENGTH	:	2.52m
TRENCH BEARING	:	139°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-GS-TRC-83005

DRAWN BY: C. GOODINGS	SCALE: 1:50
LOGGED BY: D. INKSTER	DATE: 24/07/83
APPROVED BY: V. OUFORD	

GDR:E205,5719309860II.LOG

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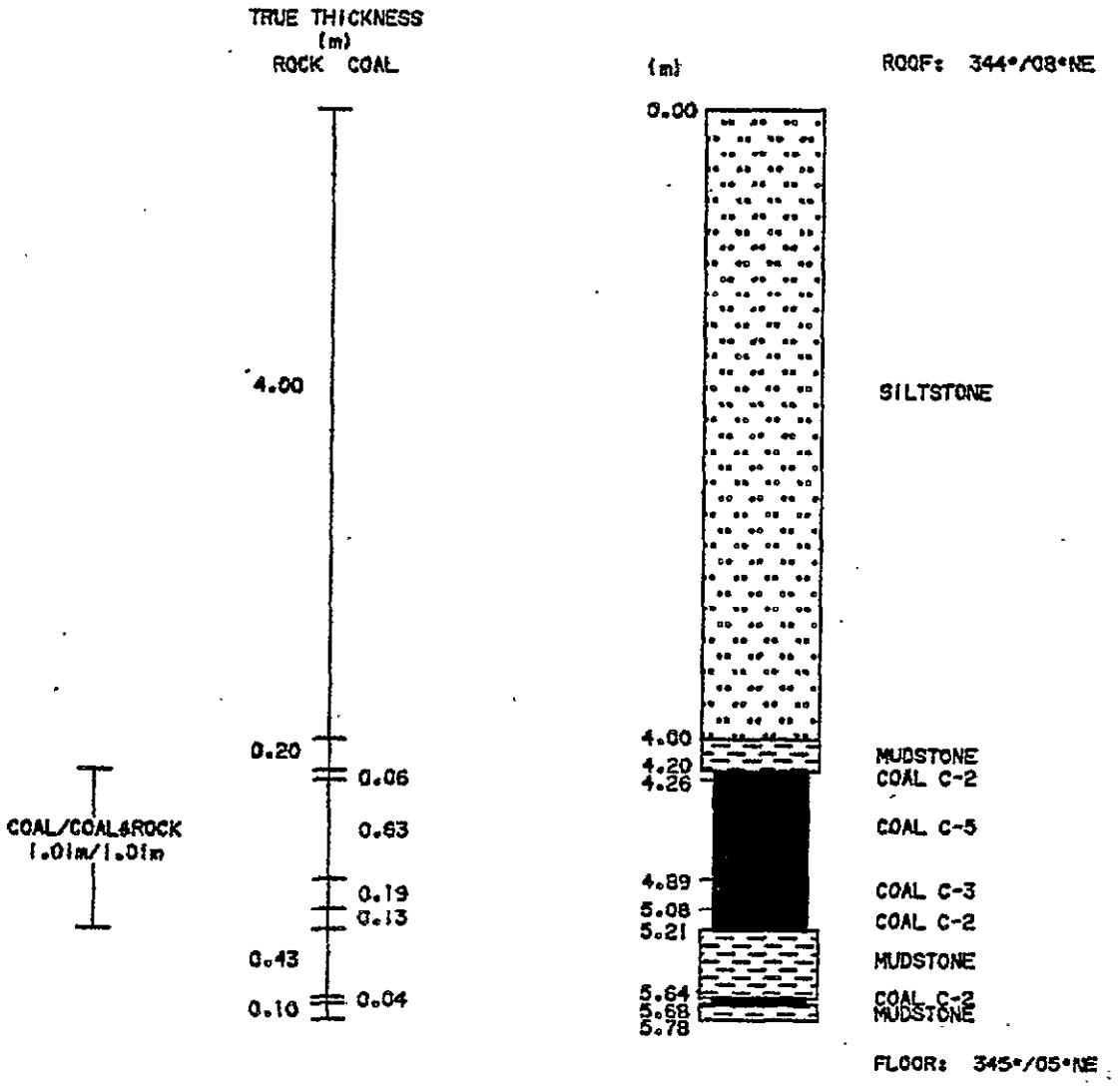
83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83005

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25			MUDSTONE	DK.GY MNR FE STN, FAINT CARB LAM. ROOF.
	0.25	0.94	0.69			COAL	C-3 HARD, SHRD.
	0.94	1.36	0.42			MUDSTONE	DK.GY CARB LAM, MNR COAL PTGS.
	1.36	2.09	0.73			COAL	C-3 V SHRD.
	2.09	2.52	0.43			SILTSTONE	DK.GY CARB LAM, SML PL CASTS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	DRESSER
UTM COORDINATES	:	6129050mN, 571915mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 81060-70
TRENCH DEPTH	:	0.4m
TRENCH WIDTH	:	0.3m
TRENCH LENGTH	:	5.78m
TRENCH BEARING	:	255°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-GS-TRC-83006

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: M. MILNE	DATE: 29/07/83
APPROVED BY: V. OUFORD	

090:1205,571830984012.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	4.00	4.00			SILTSTONE	M.GY.THNB FE STN, PL CASTS - BLADES, SLIGHTLY QUA RTZITIC, FRAC, DISCONTINUOUS LAM. PART OF ROOF.
	4.00	4.20	0.20			MUDSTONE	M.GY WTHRD BN, MNR FE STN, V RUBBLY, CONCHOI DAL FRAC. PART OF ROOF.
	4.20	4.26	0.06			COAL	C-2 CHUNKY.
	4.26	4.89	0.63			COAL	C-5 HARD, BLKY.
	4.89	5.08	0.19			COAL	C-3 V HARD, BLKY, BREAKS IN CUBES.
	5.08	5.21	0.13			COAL	C-2
	5.21	5.64	0.43			MUDSTONE	DK.GY.THNB WTHRD BN, MNR FE STN, PL CASTS, CONCHOI DAL FRAC.
	5.64	5.68	0.04			COAL	C-2 HARD, BLKY.

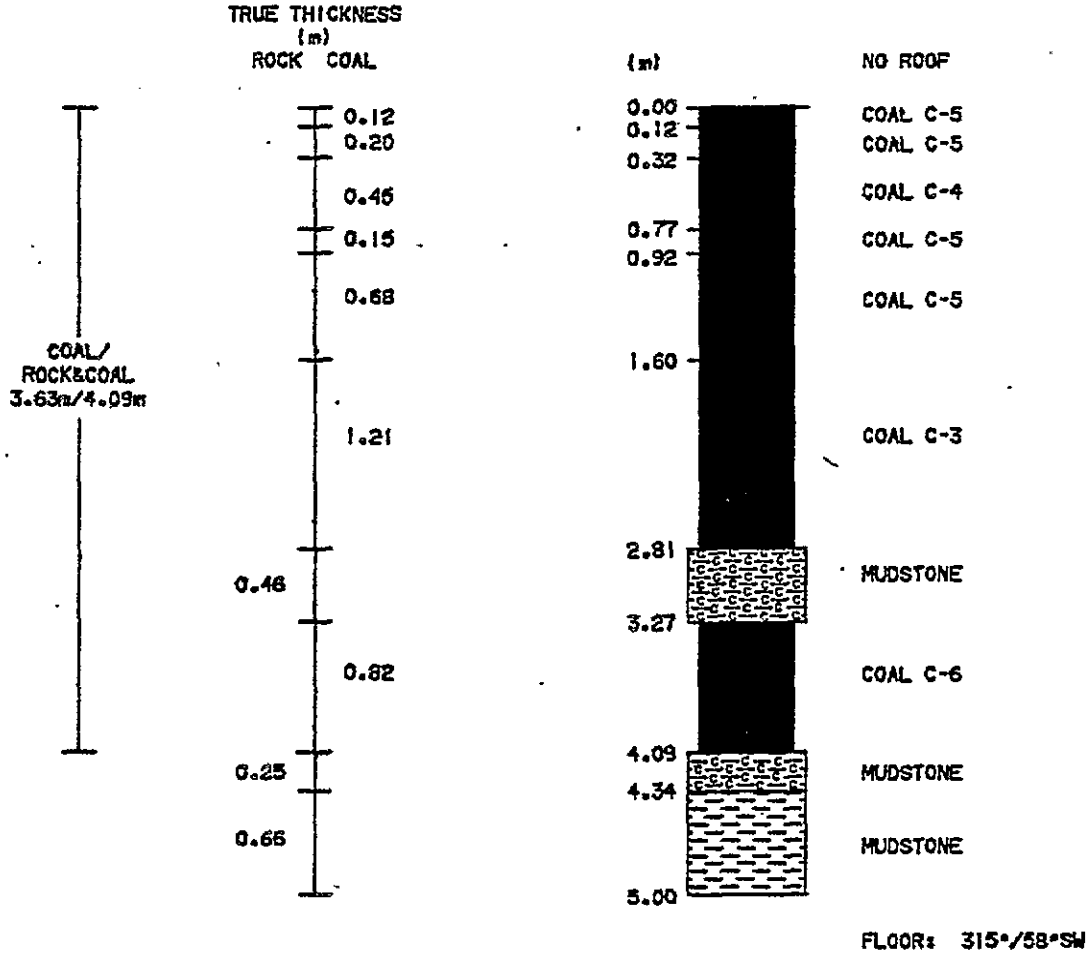
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	5.68	5.78	0.10			MUDSTONE	DK.GY.THNB HAS LARGE PL CASTS. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6133675mN, 564300mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7193-010
TRENCH DEPTH	:	0.8m
TRENCH WIDTH	:	0.8m
TRENCH LENGTH	:	5.00m
TRENCH BEARING	:	230°
TRENCH SLOPE	:	42°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-GS-TRC-83007

DRAWN BY: A. MOTYKA	SCALE: 1:50
LOGGED BY: M. MILNE	DATE: 30/07/83
APPROVED BY: V. DUFORD	

GDR:[205,071830]83012.LOG

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83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83007

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.12	0.12			COAL	C-5 SHRD, CHUNKY. NO ROOF. (EARTH OVERLYING).
	0.12	0.32	0.20			COAL	C-5 DULL, PWDR.
	0.32	0.77	0.45			COAL	C-4 SHRD.
	0.77	0.92	0.15			COAL	C-5 DULL, PWDRY.
	0.92	1.60	0.68			COAL	C-5 HARD, SHRD.
	1.60	2.81	1.21			COAL	C-3 HARD, BLKY.
	2.81	3.27	0.46			MUDSTONE	CARB.BLK V COALY, V MNR FE STN, SHRD SURF, STREAKS BLK - ALMOST COAL C-6?.
	3.27	4.09	0.82			COAL	C-6 MUDDY, SHRD, V SHINY ON SHRD SURF.
	4.09	4.34	0.25			MUDSTONE	CARB.BLK V CARB, NUMEROUS COALY STRGS.

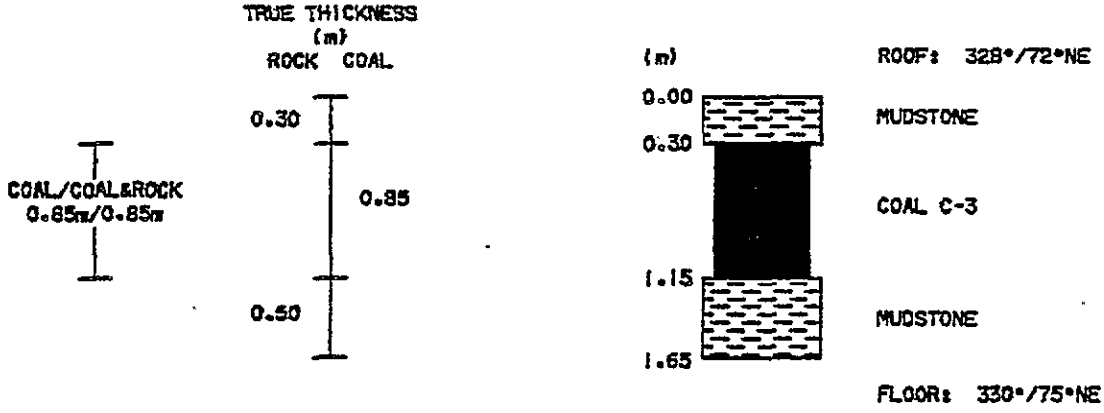
* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83007

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	4.34	5.00	0.66			MUDSTONE	DK.GY HAS BN LAM?, FE STN, CARB PL FRAGS, BLA DES-RIBBING PRESERVED. FE ST CONC (ORNG), LISTRIC SURF. FLOOR.

* DENOTES MEASURED BCA



FORMATION	:	BRENOT
UTM COORDINATES	:	6130950mN, 565820mE
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7193-071
TRENCH DEPTH	:	0.8m
TRENCH WIDTH	:	0.3m
TRENCH LENGTH	:	1.65m
TRENCH BEARING	:	266°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
NORTHEASTERN BRITISH COLUMBIA
TRENCH LOG
GDR-GS-TRC-83008

DRAWN BY: C. GOODINGS	SCALE: 1:50
LOGGED BY: E. SWANBERGSON	DATE: 27/07/83
APPROVED BY: V. DUFORD	

GSB:7205.57183098012.L06

XXXXX

83/11/15 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC83008

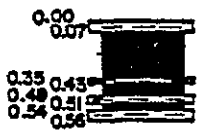
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			MUDSTONE	LT.BN THN LAM, MNR FE STN. ROOF.
	0.30	1.15	0.85			COAL	C-3 ATTITUDE CHANGES WITHIN COAL UNIT.
	1.15	1.65	0.50			MUDSTONE	DK.GY PL DEBRIS, MNR FE STN, LARGE COALIFIED PL FRAGS & BLADES. FLOOR.

COAL / COAL+ROCK
0.36m / 0.46m

TRUE THICKNESS

ROCK	COAL
0.07m	
	0.28m
0.08m	
0.02m	0.06m
0.03m	0.02m

(m)



ROOF:

MUDSTONE
COAL: C-1
COAL MUDSTONE
COAL MUDSTONE
MUDSTONE

FLOOR: 320° / 50° SW

FORMATION	:	LOWER GETHING
UTM COORDINATES	:	6134761 m N, 563 946 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7189-199
TRENCH DEPTH	:	0.50 m
TRENCH WIDTH	:	0.38 m
TRENCH LENGTH	:	0.57 m
TRENCH BEARING	:	230°
TRENCH SLOPE	:	68°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-GS-TRC 82035

DRAWN BY: M. MILNE	SCALE 1:50
LOGGED BY: M. BESSO	DATE JUNE 14 / 82
APPROVED BY:	

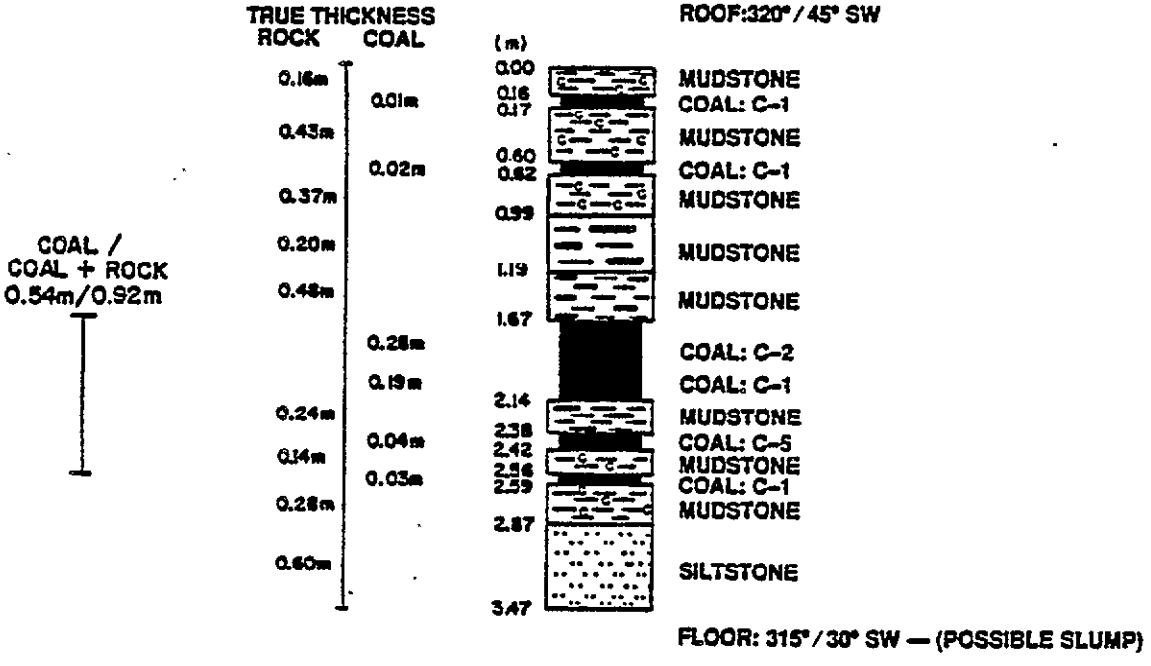
XXXX

82/10/28 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: 05 DATA SOURCE: IRL82655

BCA	DEPTH FROM	DEPTH TO	INTERVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.07	0.07			MUDSTONE	ROOF-NO DESCRIPTION.
	0.07	0.35	0.28			COAL	C-1
	0.35	0.43	0.08			MUDSTONE	CARB.DK.GY
	0.43	0.49	0.06			COAL	C-3 BRITTLE; SEMI-GLOSSY.
	0.49	0.51	0.02			MUDSTONE	CARB.DK.GY
	0.51	0.53	0.02			COAL	C-3 HARD; SEMI-GLOSS.
	0.53	0.56	0.03			MUDSTONE	FLOOR NO DESCRIPTION.

* DENOTES MEASURED BCA



FORMATION	: GETHING
UTM COORDINATES	: 6134732 m N, 564 088 m E
MAP CARD NUMBER	: N/A
AIR PHOTO NUMBER	: BC 7189-199
TRENCH DEPTH	: 0.15 m
TRENCH WIDTH	: 1.05 m
TRENCH LENGTH	: 3.47 m
TRENCH BEARING	: 230°
TRENCH SLOPE	: 68°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-GS-TRC 82037

DRAWN BY: M. MILNE	SCALE 1:50
LOGGED BY: M. BESSO	DATE JUNE / 82
APPROVED BY:	

XXXXX

PROJECT: GDR BLOCK: G5 DATA SOURCE: TRC82037

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.16	0.16			MUDSTONE	CARB.DK.GY PLT HASH.
	0.16	0.17	0.01			COAL	C-1
	0.17	0.60	0.43			MUDSTONE	CARB.DK.GY. COALY LAM (1-2CM)
	0.60	0.62	0.02			COAL	C-1
	0.62	0.99	0.37			MUDSTONE	CARB.DK.GY FLAKY
	0.99	1.19	0.20			MUDSTONE	CARB.DK.GY INTERBEDDED WITH C-1 COAL.
	1.19	1.67	0.48			MUDSTONE	CARB.DK.GY WITH COAL LAM (1-2MM).
	1.67	1.95	0.28			COAL	C-2
	1.95	2.14	0.19			COAL	C-1
	2.14	2.38	0.24			MUDSTONE	DK.GY COALY LAM (4MM).

* DENOTES MEASURED BCA

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC82037

HCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	2.38	2.42	0.04			COAL	C-5
	2.42	2.56	0.14			MUDSTONE	CARB.DK.GY FISSILE
	2.56	2.59	0.03			COAL	C-1
	2.59	2.87	0.28			MUDSTONE	CARB.GY PLT HASH: RUBBLY.
	2.87	3.47	0.60			SILTSTONE	GY.MAS SILICEOUS.

* DENOTES MEASURED HCA

COAL/
COAL + ROCK

0.36m/0.39m

TRUE THICKNESS

ROCK	COAL
0.15m	0.08m
0.12m	0.03m
0.39m	0.11m
0.03m	0.25m
0.06m	

ROOF:315°/70° SW

(m)	
0.00	MUDSTONE
0.15	COAL: C-3
0.23	MUDSTONE
0.35	COAL: C-3
0.38	MUDSTONE
0.77	COAL: C-3
0.88	MUDSTONE
0.91	COAL: C-2
1.16	MUDSTONE
1.22	

FLOOR: 315°/60° SW

FORMATION	: LWR. GETHING ?
UTM COORDINATES	: 6135037 m N, 563 784 m E
MAP CARD NUMBER	: N/A
AIR PHOTO NUMBER	: BC 7189-199
TRENCH DEPTH	: 0.30 m
TRENCH WIDTH	: 0.67 m
TRENCH LENGTH	: 1.22 m
TRENCH BEARING	: 266°
TRENCH SLOPE	: 55°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-GS-TRC 82038

DRAWN BY:	M. J. MILNE	SCALE 1:50
LOGGED BY:	M. BESSO	DATE JUNE /82
APPROVED BY:		

XXXXX

82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

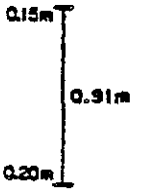
PROJECT: GDR BLOCK: GS DATA SOURCE: TRC82038

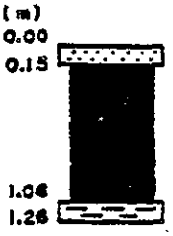
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.15	0.15			MUDSTONE	CARB.DK.GY RUBBLY
	0.15	0.23	0.08			COAL	C-3
	0.23	0.35	0.12			MUDSTONE	CARB.DK.GY PLT HASH; RUBBLY.
	0.35	0.38	0.03			COAL	C-3
	0.38	0.77	0.39			MUDSTONE	FER.DK.BN
	0.77	0.88	0.11			COAL	C-3 WET.
	0.88	0.91	0.03			MUDSTONE	DK.GY HARD.PLATEY.
	0.91	1.16	0.25			COAL	C-2
	1.16	1.22	0.06			MUDSTONE	DK.BN COALY LAMINATIONS.

* DENOTES MEASURED BCA

COAL/
COAL + ROCK
0.91m/0.91m

TRUE THICKNESS
ROCK COAL





ROOF:330° / 60° SW

SANDSTONE

COAL: C-4

MUDSTONE

FLOOR: 330° / 50° SW

FORMATION	: LWR. GETHING ?
UTM COORDINATES	: 6135037 m N, 563 784 m E
MAP CARD NUMBER	: N/A
AIR PHOTO NUMBER	: BC 7189-199
TRENCH DEPTH	: 0.64 m
TRENCH WIDTH	: 1.40 m
TRENCH LENGTH	: 1.26 m
TRENCH BEARING	: 240°
TRENCH SLOPE	: 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT
TRENCH LOG
GDR-GS-TRC 82039

DRAWN BY:	M. MILNE	SCALE 1:50
LOGGED BY:	M. BESSO	DATE JUNE /82
APPROVED BY:		

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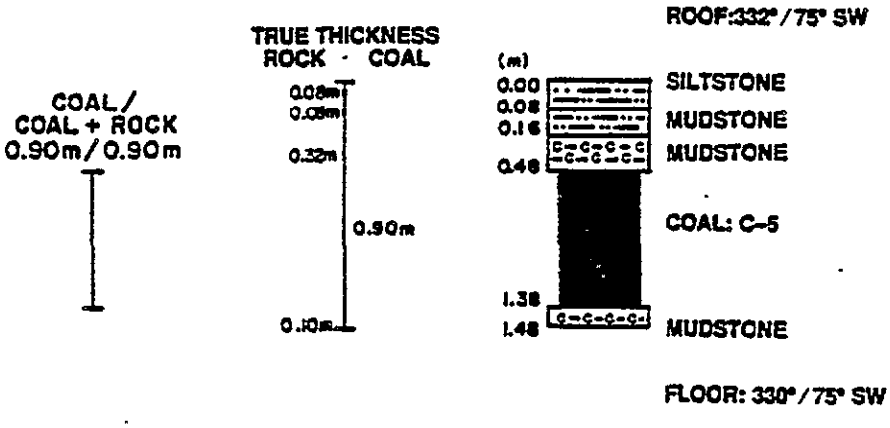
82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: G5 DATA SOURCE: TRC82039

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.15	0.15			SANDSTONE	FG.GY SILICEOUS. RESISTANT. TABULAR JOINTING.
	0.15	1.06	0.91			COAL	C-4
	1.06	1.26	0.20			MUDSTONE	FER.GY GY WITH HUES OF BN & GN.

* DENOTES MEASURED BCA



FORMATION	: GETHING ?
UTM COORDINATES	: 6135037 m N, 563 784 m E
MAP CARD NUMBER	: N/A
AIR PHOTO NUMBER	: BC 7189-199
TRENCH DEPTH	: 0.46 m
TRENCH WIDTH	: 1.05 m
TRENCH LENGTH	: 1.48 m
TRENCH BEARING	: 240°
TRENCH SLOPE	: VERTICAL 90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT
TRENCH LOG
GDR-GS-TRC 82040

DRAWN BY: M. MILNE	SCALE 1 : 50
LOGGED BY: M. BESSO	DATE JUNE 29/ 82
APPROVED BY:	

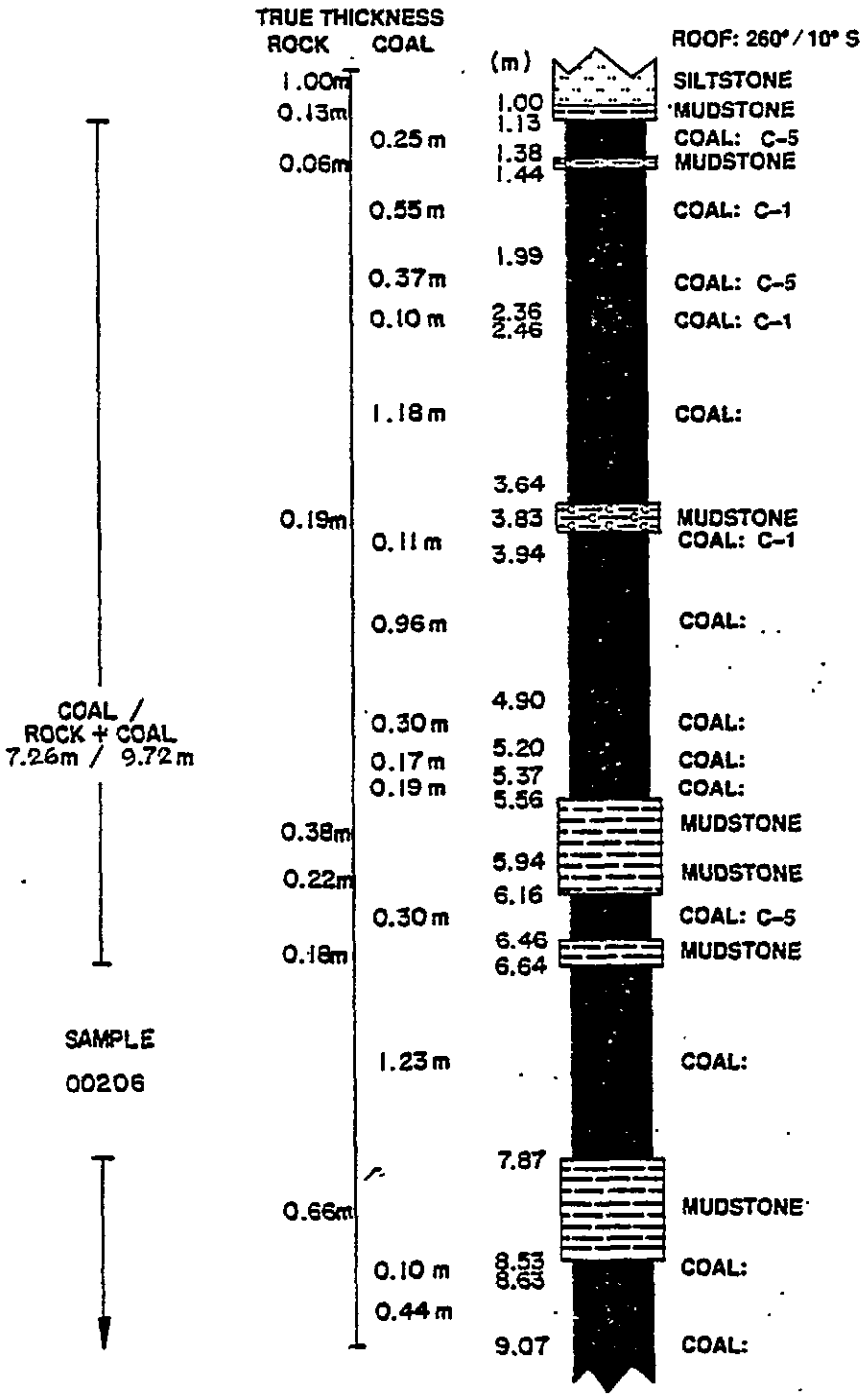
XXXXX

82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: 65 DATA SOURCE: TRC82040

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.08	0.08			SILTSTONE	FER.M.GY.LAM ARGILLACEOUS
	0.08	0.16	0.08			MUDSTONE	GY GN-GY FLECKS.
	0.16	0.48	0.32			MUDSTONE	DK.GY RUBBLY. SLIGHTLY FERRUGINOUS.
	0.48	1.38	0.90			COAL	C-S GRADING FROM DULL POWDERY TO BRIGHT.
	1.38	1.48	0.10			MUDSTONE	CARB.BLK EXTREMELY CARB; PLT FRAGS <.5MM; FE STA IN.

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6136493 m N, 566 087 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC-7189-197
TRENCH DEPTH	:	1.53 m
TRENCH WIDTH	:	0.60 m
TRENCH LENGTH	:	13.13 m
TRENCH BEARING	:	343°
TRENCH SLOPE	:	50° N

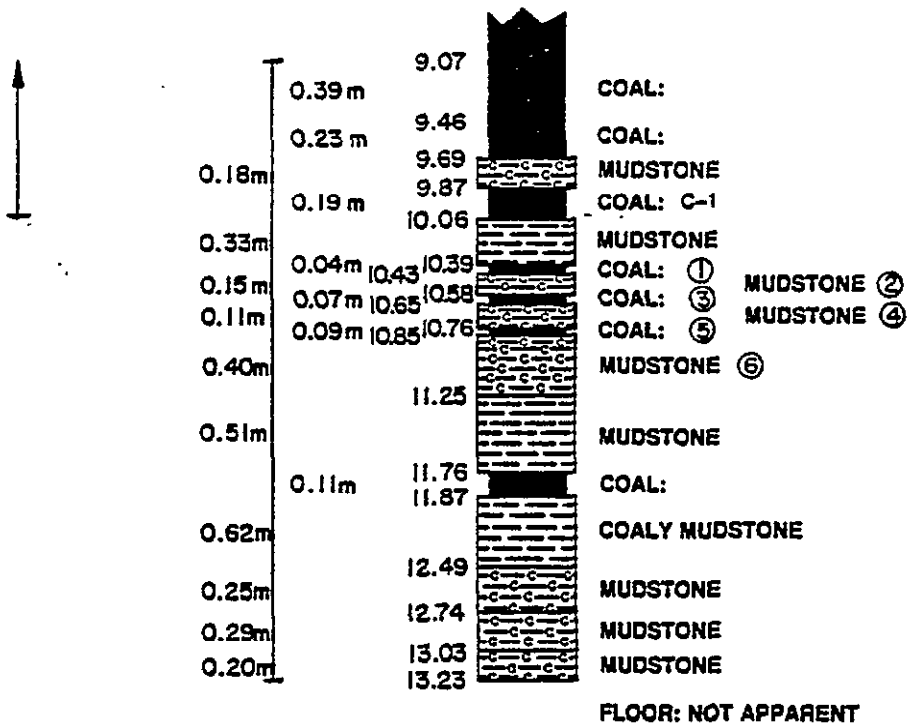
GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-GS-TRC 82041

DRAWN BY:	G. THOMSON	SCALE	1 : 50
LOGGED BY:	M. BESSO	DATE	JUNE 23,1982
APPROVED BY:			



NOTES: ROCK DESCRIPTIONS

① COAL ...VERY VITREOUS, HARD
② MUDSTONE ...COAL LAMINATIONS, DARK GREY, CARBONACEOUS
③ COAL ...HARD, BRIGHT
④ MUDSTONE ...MEDIUM GREY, VERY CARBONACEOUS
⑤ COAL ...HARD, BRITTLE
⑥ MUDSTONE ...LIGHT GREY, CARBONACEOUS

IN FIELD NOTES, TRENCH WAS LOGGED FROM THE FLOOR UP TO THE ROOF TO AVOID DEBRIS FALL.

AS INDICATED IN ROCK DESCRIPTION NOTES, A FAIR AMOUNT OF SLUMPING OCCURRED IN THE TRENCH AREA.

SOME LITHOLOGIES WERE DAMP TO WET WHEN LOGGED.

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

GDR–GS–TRC 82041 — Continued

DRAWN BY:	G. THOMSON	SCALE 1 : 50
LOGGED BY:	M. BESSO	DATE JUNE 26, 1982
APPROVED BY:		

XXXXX

82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: G5 DATA SOURCE: TRC82041

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.00	1.00			SILTSTONE	GY
	1.00	1.13	0.13			MUDSTONE	LT.GY FISSILE
	1.13	1.38	0.25			COAL	C-5.PWRD SOFT & DULL.
	1.38	1.44	0.06			MUDSTONE	CARB.LT.GY
	1.44	1.99	0.55			COAL	C-3 BRT. BRITTLE & HARD.
	1.99	2.36	0.37			COAL	C-5.PWRD SOFT & DULL.
	2.36	2.46	0.10			COAL	C-3 BRT CONCHOIDAL FRACTURE; HARD.
	2.46	3.64	1.18			COAL	C-4 BLOOM MIXED WITH MUDST.
	3.64	3.83	0.19			MUDSTONE	CARB.GY BL-GY.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: 65 DATA SOURCE: IRC82041

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	3.83	3.94	0.11			COAL	C-3 CONCHOIDAL FRACTURE; HARD.
	3.94	4.90	0.96			COAL	C-3.PWRD BLOOM; RUBBLY.
	4.90	5.20	0.30			COAL	C-3 HAS VITRAIN BANDS.
	5.20	5.37	0.17			COAL	C-3.PWRD BLOOM
	5.37	5.56	0.19			COAL	C-3 CHUNKY; BRITTLE; HARD.
	5.56	5.94	0.38			MUDSTONE	GY BL-GY; FISSILE.
	5.94	6.16	0.22			MUDSTONE	M.GY RUBBLY
	6.16	6.46	0.30			COAL	C-5.PWRD DULL; SOFT.
	6.46	6.64	0.18			MUDSTONE	BN RUSTY
	6.64	7.87	1.23	00206		COAL	C-3 HARD; BRITTLE.

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: G5 DATA SOURCE: TRC82041

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	7.87	8.53	0.66			MUDSTONE	M.GY FISSILE
	8.53	8.63	0.10			COAL	C-3 CHUNKY CUBES.
	8.63	9.07	0.44			COAL	C-3.PWRD BLOOM
	9.07	9.46	0.39			COAL	C-3.PWRD BLOOM
	9.46	9.69	0.23			COAL	C-5.PWRD DULL CHUNKS.
	9.69	9.87	0.18			MUDSTONE	CARB.DK.GY
	9.87	10.06	0.19			COAL	C-2 BRT CUBIC CHUNKS.
	10.06	10.39	0.33			MUDSTONE	M.GY FISSILE
	10.39	10.43	0.04			COAL	C-2 HARD; BRT.
	10.43	10.58	0.15			MUDSTONE	CARB.DK.GY COALY

* DENOTES MEASURED BCA

XXXXX

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC82041

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	10.58	10.65	0.07			COAL	C-2 HARD; BRT.
	10.65	10.76	0.11			MUDSTONE	CARB.M.GY
	10.76	10.85	0.09			COAL	C-1 HARD; BRT.
	10.85	11.25	0.40			MUDSTONE	CARB.LT.GY
	11.25	11.76	0.51			MUDSTONE	CARB.M.GY
	11.76	11.87	0.11			COAL	C-1 HARD; SHINY; BRITTLE.
	11.87	12.49	0.62			MUDSTONE	CARB COALY MUDST; COAL IS HARD & SHINY.
	12.49	12.74	0.25			MUDSTONE	CARB.M.GY
	12.74	13.03	0.29			MUDSTONE	CARB.GY
	13.03	13.23	0.20			MUDSTONE	CARB

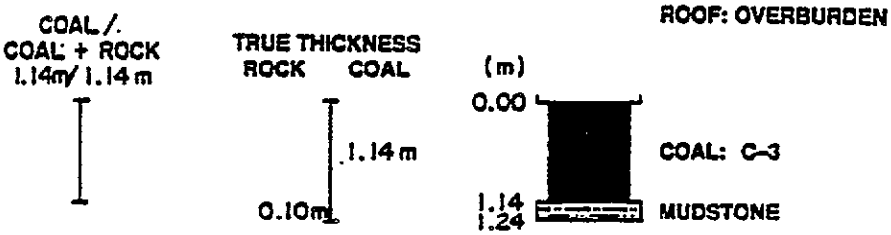
* DENOTES MEASURED BCA

GULF CANADA RESOURCES INC. - COAL DIVISION

29/OCT/82 HEAD ANALYSIS SUMMARY.

Goodrich South ANALYSIS BASIS TYPE - AD NAME OF STANDARD - ASTM

DATA SOURCE	SLAM	SAMPLE ID	Residual MOISTURE%	ASH%	FIXED CARBON%	VOLATILE MATTER%	TOTAL SULPHUR%	GROSS CALORIFIC VALUE (MJ-KG)	SPG	FSI
TRC82041										
		206	6.36	18.12	48.56	26.96	0.26	20.67	1.53	0.00



FORMATION	:	LWR. GETHING ?
UTM COORDINATES	:	6135037 m N, 563 784 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7169-199
TRENCH DEPTH	:	1.00 m
TRENCH WIDTH	:	0.90 m
TRENCH LENGTH	:	1.24 m
TRENCH BEARING	:	250°
TRENCH SLOPE	:	62°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-GS-TRC 82042

DRAWN BY:	M. J. MILNE	SCALE	1 : 50
LOGGED BY:	M. BESSO	DATE	JUNE 28, 1982
APPROVED BY:			

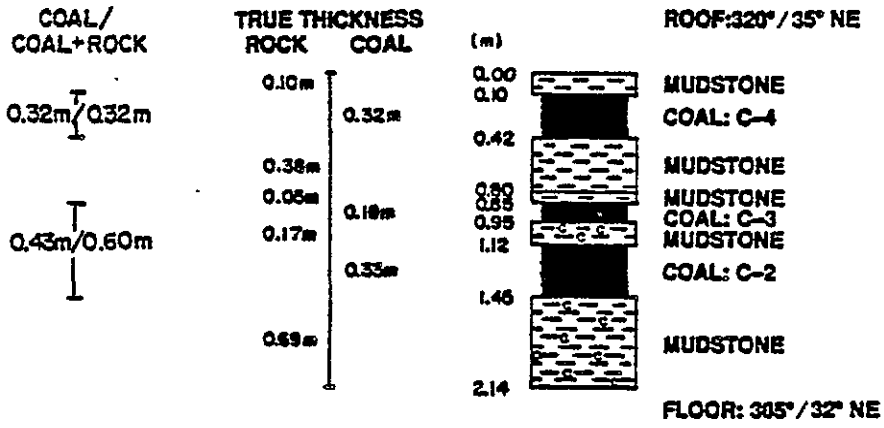
XXXXX

82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC82042

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	1.14	1.14			COAL	C-3 HIGHLY OXIDIZED; WET. BANDED. BRT/DULL; HARD/SOFT.
	1.14	1.24	0.10			MUDSTONE	FISSILE

* DENOTES MEASURED BCA



NOTE: Beds may be overturned.

FORMATION	:	GETHING
UTM COORDINATES	:	6137250 m N, 565 950 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	HA 131 080 6 209
TRENCH DEPTH	:	0.10 m
TRENCH WIDTH	:	0.3 m
TRENCH LENGTH	:	2.14 m
TRENCH BEARING	:	270°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG
GDR-GS-TRC 82044

DRAWN BY: M.J. MILNE	SCALE 1:50
LOGGED BY: M. BESSO	DATE JUNE / 82
APPROVED BY:	

XXX XX

82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: 65 DATA SOURCE: TRC82044

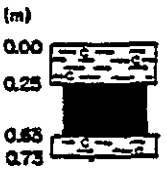
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY SLATY; BREAKS INTO SHARP FLAKES.
	0.10	0.42	0.32			COAL	C-4.BLK BREAKS INTO PLATES; WEATHERED.
	0.42	0.80	0.38			MUDSTONE	FER.M.GY CLAY CONC.(2-15CM)
	0.80	0.85	0.05			MUDSTONE	CARB.GY COALY; ALMOST ALL PLT HASH.
	0.85	0.95	0.10			COAL	C-3.BLK
	0.95	1.12	0.17			MUDSTONE	CARB.M.GY PLT FRAGS & COALY BANDS.
	1.12	1.45	0.33			COAL	C-2
	1.45	2.14	0.69			MUDSTONE	CARB.GY.MAS CLAYEY; RESISTANT.

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
0.38m/0.38m

TRUE THICKNESS

ROCK	COAL
0.25m	
	0.38m
0.10m	



ROOF:180°/10° SW

MUDSTONE

COAL: C-5

MUDSTONE

FLOOR: 180°/10° SW

FORMATION : GETHING
UTM COORDINATES : 6137300 m N, 565 950 m E
MAP CARD NUMBER : N/A
AIR PHOTO NUMBER : HA 131 080 6 209
TRENCH DEPTH : 0.10 m
TRENCH WIDTH : 0.30m
TRENCH LENGTH : 0.73 m
TRENCH BEARING : 270°
TRENCH SLOPE : 90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT
TRENCH LOG
GDR-GS-TRC 82045

DRAWN BY: M.J. MILNE	SCALE 1:50
LOGGED BY: M. BESSO	DATE JUNE/82
APPROVED BY:	

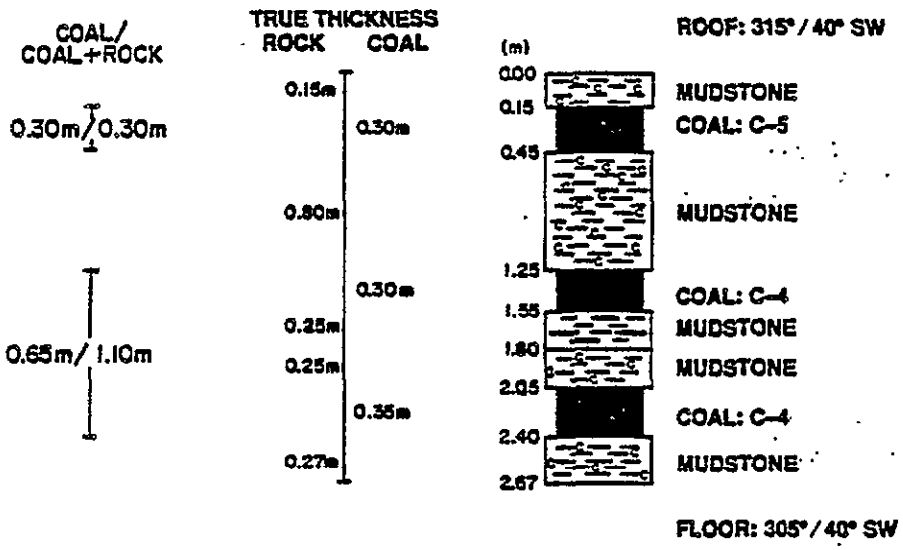
XXXXX

82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: 65 DATA SOURCE: TRC82045

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.25	0.25			MUDSTONE	CARB.DK.GY CONCHOIDAL FRACTURE.
	0.25	0.63	0.38			COAL	C-5
	0.63	0.73	0.10			MUDSTONE	CARB.DK.GY COALY

* DENOTES MEASURED BCA



FORMATION	:	GETHING
UTM COORDINATES	:	6129500 m N, 573 750 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC-7193-065
TRENCH DEPTH	:	0.50m
TRENCH WIDTH	:	0.40 m
TRENCH LENGTH	:	2.67 m
TRENCH BEARING	:	255°
TRENCH SLOPE	:	75° E

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-GS-TRC 82048

DRAWN BY: M.J. MILNE	SCALE 1:50
LOGGED BY: M. BESSO	DATE JULY/82
APPROVED BY:	

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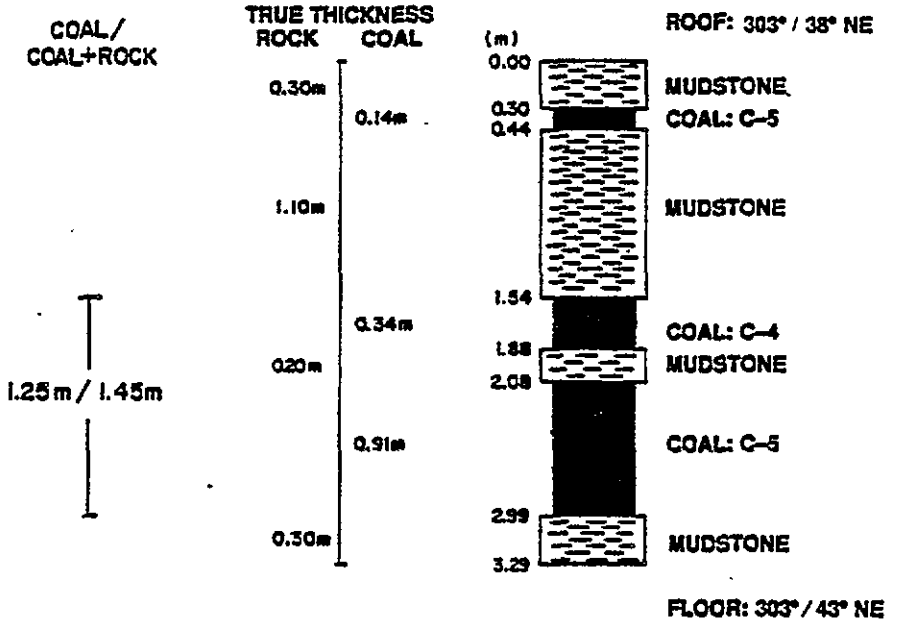
82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: GDR BLOCK: G5 DATA SOURCE: TRC82048

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.15	0.15			MUDSTONE	CARB.GY WEATHERS GY; PLT FRAGS; RUBBLY.
	0.15	0.45	0.30			COAL	C-5
	0.45	1.25	0.80			MUDSTONE	CARB.M.GY FERRUGINOUS; WEATHERS RUSTY; PLT FRAGS.
	1.25	1.55	0.30			COAL	C-4
	1.55	1.80	0.25			MUDSTONE	CARB.DK.GY ALMOST TOTALLY COMPOSED OF PLT FRAGS; C OALT LAMS; BRITTLE.
	1.80	2.05	0.25			MUDSTONE	CARB.DK.GY FERRUGINOUS; WEATHERS ORNG-BN; RESISTAN T.
	2.05	2.40	0.35			COAL	C-4
	2.40	2.67	0.27			MUDSTONE	CARB.GY WEATHERS ORNG-BN; RESISTANT.

* DENOTES MEASURED BCA



FORMATION	:	GETHING ?
UTM COORDINATES	:	6133300 m N, 574 725 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC 7193-018
TRENCH DEPTH	:	CUT BANK
TRENCH WIDTH	:	CUT BANK
TRENCH LENGTH	:	3.29 m
TRENCH BEARING	:	270°
TRENCH SLOPE	:	0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG

GDR-GS-TRC 82049

DRAWN BY: S. GREGG	SCALE 1:50
LOGGED BY: V. ODEGAARD	DATE JULY/82
APPROVED BY:	

XXXXX

82/10/20 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

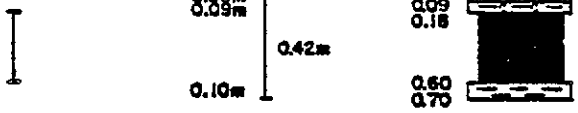
PROJECT: GDR BLOCK: GS DATA SOURCE: TRC82049

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.30	0.30			MUDSTONE	DK.GY DK GY-BN; FISSILE.
	0.30	0.44	0.14			COAL	C-5 CRUMBLY; WET & WEATHERED.
	0.44	1.54	1.10			MUDSTONE	M.GY M-DK GY;FE STAINS; RUBBLY; TRACE OF CAR B PLT REMAINS
	1.54	1.88	0.34			COAL	C-4 CRUMBLY; WET & WEATHERED.
	1.88	2.08	0.20			MUDSTONE	M.GY M GY-BN; RUBBLY; CARB PLT REMAINS.
	2.08	2.99	0.91			COAL	C-5 POWDERY; POSS THIN BRT BANDS; WET.
	2.99	3.29	0.30			MUDSTONE	M.GY M GY-BN; OCC BRT COAL STRINGERS; WET.

* DENOTES MEASURED BCA

ROOF: 311°/25° W

COAL/
COAL+ROCK
0.42m/0.42m



FLOOR: 311°/25° W

FORMATION	:	GETHING
UTM COORDINATES	:	6131800 m N, 578 550 m E
MAP CARD NUMBER	:	N/A
AIR PHOTO NUMBER	:	BC-7193-063
TRENCH DEPTH	:	N/A CUT BANK EXPOSURE
TRENCH WIDTH	:	N/A CUT BANK EXPOSUIRE
TRENCH LENGTH	:	0.70 m
TRENCH BEARING	:	221°
TRENCH SLOPE	:	90°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

GOODRICH COAL PROJECT

TRENCH LOG

GDR-GS-TRC 82050

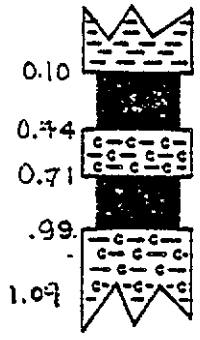
DRAWN BY: N. J. MILNE	SCALE 1:50
LOGGED BY: M. MILLARD	DATE JULY/82
APPROVED BY:	

GDR-GS-TRC-

COAL / COAL+ROCK 0.62/0.89m

TRUE THICKNESS

ROCK	COAL
0.10	
	0.15m
	0.02m
0.27 m	0.17m
	0.20m
	0.08m
0.10	



ROOF: 303°/42°N.E.

MUDSTONE:	medium to dark grey, well fractured, contorted ~~compacted~~ in places, well weathered (chalky white)
COAL:	very hard, very bright, blocky, 80% vitrain
COAL:	dull, soft and powdery
COAL:	bright, flakey pieces, easily broken, minor sheared surfaces
MUDSTONE:	dark grey, very carbonaceous, thin coal lenses, blocky, well fractured, weathered light grey
COAL:	bright, minor dark bands, soft, easily broken flakey pieces
COAL:	dull, soft, bright bands, powdery
MUDSTONE:	dark grey, very carbonaceous, weathered, light brown

FLOOR: 304°/44° N.E

FORMATION : BRENOT
UTM COORDINATES : 134 870 N, 571 125 E
MAP CARD NUMBER :
AIR PHOTO NUMBER : HA80780 7-218 (1:30000)
TRENCH DEPTH : 0.16m
TRENCH WIDTH : 0.31m
TRENCH LENGTH : 1.09 m
TRENCH BEARING : 033°
TRENCH SLOPE :

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

GDR-GS-TRC-81001

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: A. PETZOLD, D. DOLPH DATE OCT. / 81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC81001

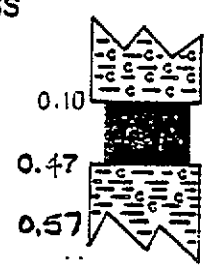
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	M-DK.GY WELL FRAC, CONTORTED IN PLACES, WELL WT HRD CHALKY WH. ROOF.
	0.10	0.25	0.15			COAL	C-1 V HARD, BLOCKY.
	0.25	0.27	0.02			COAL	C-5 SOFT, PWRD.
	0.27	0.44	0.17			COAL	C-1 FLAKEY PIECES, EASILY BROKEN, MNR SHRD SURF.
	0.44	0.71	0.27			MUDSTONE	CARB.DK.GY THIN COAL LNS, BLKY, WELL FRAC, WTHRD L T GY.
	0.71	0.91	0.20			COAL	C-2 SOFT, EASILY BROKEN, FLAKEY PIECES.
	0.91	0.99	0.08			COAL	C-4 SOFT, PWRD.
	0.99	1.09	0.10			MUDSTONE	CARB.DK.GY WTHRD LT BN. FLOOR.

* DENOTES MEASURED BCA

COAL / COAL+ROCK
0.37/0.37m

TRUE THICKNESS

ROCK	COAL
0.10	0.06m
	0.16m
	0.10m
0.10	0.05m



ROOF: 303°/37° N.E

MUDSTONE:	dark grey, very carbonaceous, weathers light brown
COAL:	dull with bright bands, soft
COAL:	very hard, dull
COAL:	soft, small, shiney pieces, easily broken
COAL:	very hard, dull, blocky
MUDSTONE:	dark grey, thin carbonaceous lenses, weathered dark brown

FLOOR: 304°/44° N.E.

FORMATION : BRENOT
UTM COORDINATES : 134 985 N, 571 165 E
MAP CARD NUMBER :
AIR PHOTO NUMBER : HA80780 7-218 (1:30000)
TRENCH DEPTH : 0.12 m
TRENCH WIDTH : 0.15m
TRENCH LENGTH : 0.37m
TRENCH BEARING : 033°
TRENCH SLOPE : 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

GDR-GS-TRC-81002

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: A. PETZOLD, D. DOLPH DATE OCT./81
APPROVED BY: H. ZSCHACH

XXXXX

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC81002

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY WTHRS LT BN. ROOF.
	0.10	0.16	0.06			COAL	C-4 SOFT.
	0.16	0.32	0.16			COAL	C-5 V HARD.
	0.32	0.42	0.10			COAL	SOFT, SML SHINY PIECES, EASILY BROKEN.
	0.42	0.47	0.05			COAL	C-5 V HARD, BLKY.
	0.47	0.57	0.10			MUDSTONE	DK.GY THN CARB LNS, WTHRD DK BN. FLOOR.
	0.57	0.67	0.10			MUDSTONE	DK.GY THN CARB LNS, WTHRD DK BN. FLOOR.
	0.67	0.77	0.10			MUDSTONE	CARB.DK.GY WTHRD LT BN. ROOF.
	0.77	1.14	0.37			COAL	

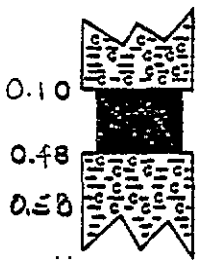
* DENOTES MEASURED BCA

GDR-T.L.G.-1

COAL / COAL+ROCK
0.38/0.38m

TRUE THICKNESS

ROCK	COAL
0.10	
	0.23m
	0.15m
0.10	



ROOF: 298° / 30° NE

MUDSTONE:	dark grey, carbonaceous, blocky
COAL:	dull, soft, minor bright bands, powdery
COAL:	hard, flakey pieces, very dull, minor ironstone weathering
MUDSTONE:	dark grey, carbonaceous, blocky

FLOOR: 298°/ 30° NE

FORMATION : BRENOT
UTM COORDINATES : 134 990 N, 570 995 E
MAP CARD NUMBER :
AIR PHOTO NUMBER : HA80780 7-218 (1: 30000)
TRENCH DEPTH : 0.11 m
TRENCH WIDTH : 0.24 m
TRENCH LENGTH : 0.58 m
TRENCH BEARING : 028°
TRENCH SLOPE : 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

GDR-GS-TRC-81003

DRAWN BY: M. ANDERSEN SCALE 1:50
LOGGED BY: A. PETZOLD, O. DOLPH DATE OCT./81
APPROVED BY: H. ZSCHACH

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83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

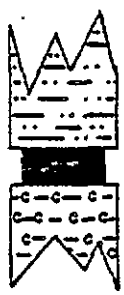
PROJECT: GDR BLOCK: GS DATA SOURCE: TRC81003

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY BLKY. ROOF.
	0.10	0.33	0.23			COAL	C-4 PWRD. SOFT.
	0.33	0.48	0.15			COAL	C-5 HARD, FLAKEY PIECES, MNR FE ST WTHRING.
	0.48	0.58	0.10			MUDSTONE	CARB.DK.GY BLOCKY. FLOOR.

* DENOTES MEASURED BCA

TRUE THICKNESS

COAL / COAL + ROCK	ROCK	COAL
0.21 / 0.21 m	0.10	0.06 m
	0.10	0.15 m



ROOF: 291° / 33° NE

MUDSTONE:	silty, dark grey, thinly bedded
COAL:	dull, flakey
COAL:	bright, dull bands, flakey pieces, easily broken
MUDSTONE:	gradational to mudstone, very carbonaceous, very soft, dark grey to black, weathered medium brown

FLOOR: 290° / 33° NE

FORMATION : BRENOT
UTM COORDINATES : 135 110 N; 570 900 E
MAP CARD NUMBER :
AIR PHOTO NUMBER : HA80780-7-218 (1:30000)
TRENCH DEPTH : 0.41m
TRENCH WIDTH : 0.27m
TRENCH LENGTH : 0.41m
TRENCH BEARING : 021°
TRENCH SLOPE : 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-GS-TRC-81004

DRAWN BY: C. BARNES SCALE 1:50
LOGGED BY: A. PETZOLD, D. DOLPH DATE OCT./81
APPROVED BY: H. ZSCHACH

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83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

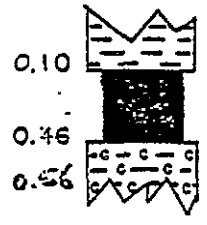
PROJECT: GDR BLOCK: GS DATA SOURCE: TRC81004

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	SLTY.DK.GY.THNB ROOF.
	0.10	0.16	0.06			COAL	C-5 FLAKEY.
	0.16	0.31	0.15			COAL	C-2 FLAKEY PIECES, EASILY BRKN.
	0.31	0.41	0.10			MUDSTONE	CARB.DK.GY GRADATIONAL TO MUDST, DK GY TO BLK, WTH RD M BN. FLOOR.

* DENOTES MEASURED BCA

TRUE THICKNESS

COAL / COAL± ROCK	ROCK	COAL
0.36/0.36m	0.10	0.14m
		0.17m
	0.10	0.05m



ROOF: 282° / 31° NE

MUDSTONE:	dark grey, well weathered, well fractured
COAL:	dull, soft, powdery
COAL:	well weathered, dark grey, blocky, fractured
COAL:	dull, soft, powdery
MUDSTONE:	carbonaceous, thin coaly lenses, well fractured, well weathered

FLOOR: 282° / 31° NE

FORMATION : BRENOT
UTM COORDINATES : 135 200 N, 570 790 E
MAP CARD NUMBER :
AIR PHOTO NUMBER : HA 80780 - 7 - 218 (1:30000)
TRENCH DEPTH : 0.12 m
TRENCH WIDTH : 0.18m
TRENCH LENGTH : 0.56m
TRENCH BEARING : 012°
TRENCH SLOPE : 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-GS-TRC-81005

DRAWN BY: C. BARNES SCALE 1:50
LOGGED BY: A. PETZOLD, D. DOLPH DATE OCT./81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC81005

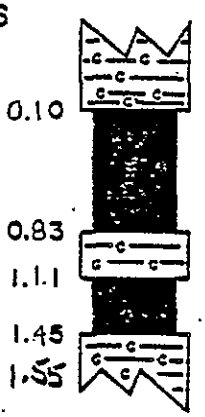
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	DK.GY WELL WTHRD, WELL FRAC. ROOF.
	0.10	0.24	0.14			COAL	C-5 SOFT, PWRD.
	0.24	0.41	0.17			COAL	DK.GY WELL WTHRD, BLKY, FRAC.
	0.41	0.46	0.05			COAL	C-5 SOFT, PWRD.
	0.46	0.56	0.10			MUDSTONE	CARB THN COALY LNS, WELL FRAC, WELL WTHRD. F LOOR.

* DENOTES MEASURED BCA

COAL / COAL + ROCK 1.07 / 1.35 m

TRUE THICKNESS

ROCK	COAL
0.10	
	0.19m
	0.54m
0.28 m	
	0.34m
0.10	



ROOF: 316°/40° N.E.

MUDSTONE:	black, carbonaceous, coaly lenses, plant and animal fossils
COAL:	very bright, blocky pieces, soft, textured with thin striations
COAL:	soft, bright, dull banded, easily broken, powdery in places
MUDSTONE:	dark grey, very carbonaceous, thin coaly lenses, blocky fracture
COAL:	dull, bright bands, soft, easily broken pieces
MUDSTONE:	very dark gray to black, very carbonaceous thin coaly lenses

FLOOR: 316°/40° NE

FORMATION : BRENOT
UTM COORDINATES : 135 270 N, 570 635 E
MAP CARD NUMBER :
AIR PHOTO NUMBER : HA80780 - 7 - 218 (1: 30000)
TRENCH DEPTH : 0 14 m
TRENCH WIDTH : 0.33 m
TRENCH LENGTH : 1.55 m
TRENCH BEARING : 046°
TRENCH SLOPE : 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

GDR-GS-TRC-81006

DRAWN BY: M. ANDERSON SCALE 1 50
LOGGED BY: A. PETZOLD DATE OCT. / 81
APPROVED BY: H. ZSCHACH

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

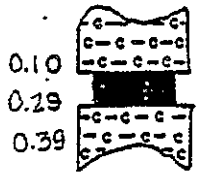
PROJECT: GDR BLOCK: GS DATA SOURCE: TRC81006

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.BLK COALY LNS, PL & ANIMAL FOS. ROOF.
	0.10	0.29	0.19			COAL	C-1 BLKY PIECES, SOFT, TEX W THN STRIATIONS
	0.29	0.83	0.54			COAL	C-2 SOFT, EASILY BROKEN, PWRD IN PLACES.
	0.83	1.11	0.28			MUDSTONE	CARB.DK.GY THN COALY LNS, BLKY FRAC..
	1.11	1.45	0.34			COAL	C-4 SOFT, EASILY BROKEN PIECES.
	1.45	1.55	0.10			MUDSTONE	CARB.DK.GY THN COALY LNS, DK GY TO BLK.

* DENOTES MEASURED BCA

TRUE THICKNESS

COAL/ COAL+ ROCK	ROCK	COAL
0.19/0.19 m		0.19m



ROOF: 304°/56° NE

MUDSTONE: dark grey, carbonaceous, thinly bedded, well fractured, weathered brown

COAL: bright, hard, blocky pieces, possibly in a sheared zone as contacts are sometimes obscure

MUDSTONE: dark grey, carbonaceous, thin coaly lenses, well weathered, chalky white

FORMATION : BRENOT
UTM COORDINATES : 135 350 N, 570 525 E
MAP CARD NUMBER :
AIR PHOTO NUMBER : HA80780 - 7 - 218 (1:30000)
TRENCH DEPTH : 0.11m
TRENCH WIDTH : 0.15m
TRENCH LENGTH : 0.39m
TRENCH BEARING : 034°
TRENCH SLOPE : 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT
TRENCH LOG

GDR-GS-TRC-91007

DRAWN BY: C. BARNES	SCALE 1:50
LOGGED BY: A. PETZOLD, D. DOLPH	DATE OCT./81
APPROVED BY: H. ZSCHACH	

XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC81007

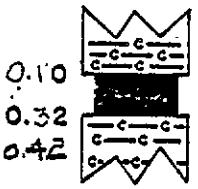
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY.THNB WELL FRAC, WTHRD BN. ROOF.
	0.10	0.29	0.19			COAL	C-1 HARD, BLKY PIECES, POSSIBLY IN A SHRD Z N AS CTCS ARE SOMETIMES OBSCURE.
	0.29	0.39	0.10			MUDSTONE	CARB.DK.GY THN COALY LNS, WELL WTHRD, CHALKY WH. F LOOR.

* DENOTES MEASURED BCA

COAL/
COAL+ROCK
0.22/0.22m

TRUE THICKNESS

ROCK 0.10
COAL 0.22m
ROCK 0.10



ROOF: 328°/62° NE

MUDSTONE: dark grey, thinly bedded, carbonaceous

COAL: bright, shiney pieces, easily broken

MUDSTONE: dark grey, carbonaceous, thin coaly lenses

FORMATION : BRENOT
UTM COORDINATES : 135 415 N, 570 405 E
MAP CARD NUMBER :
AIR PHOTO NUMBER : HA80780 - 7 - 218 (1:30000)
TRENCH DEPTH : 0.20 m
TRENCH WIDTH : 0.19 m
TRENCH LENGTH : 0.42m
TRENCH BEARING : 058°
TRENCH SLOPE : 0°

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROJECT

TRENCH LOG

GDR-GS-TRC-81008

DRAWN BY: M. ANDERSON SCALE 1:50
LOGGED BY: A. PETZOLD DATE OCT./81
APPROVED BY H. ZSCHACH

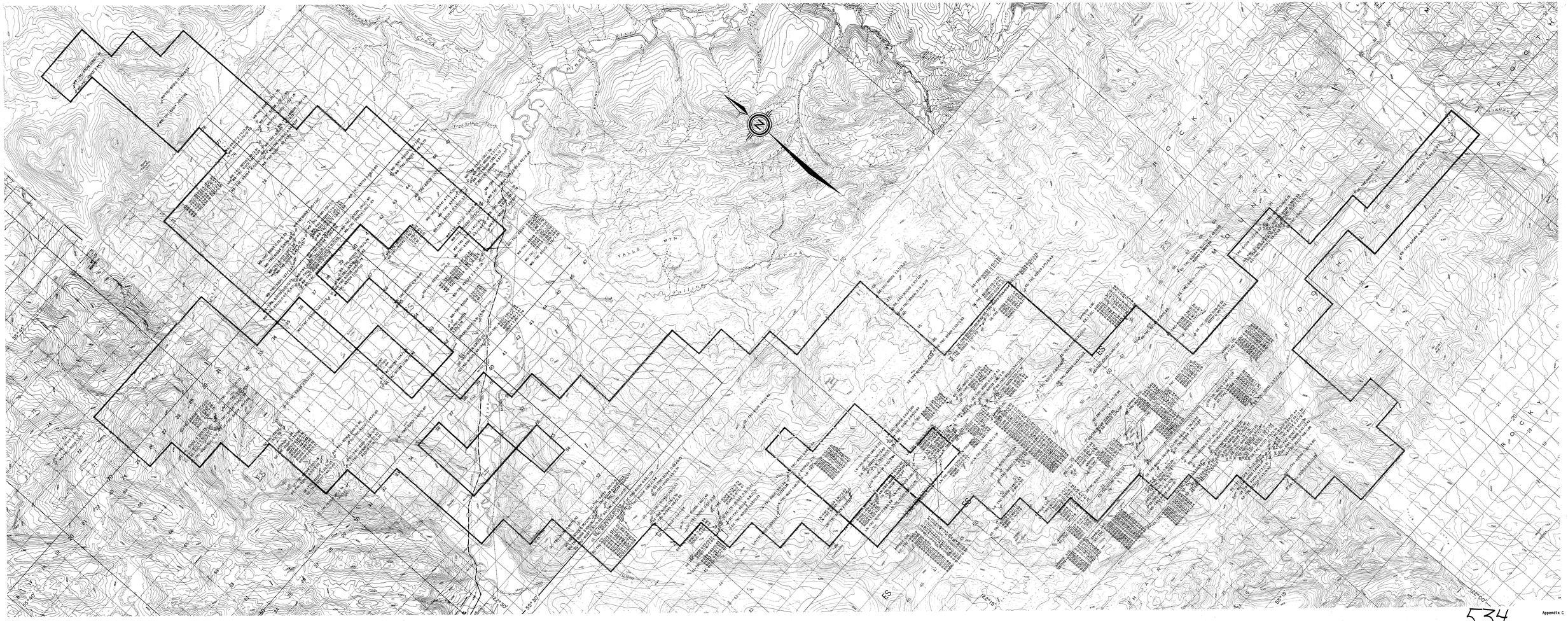
XXXXX

83/06/03 GULF CANADA RESOURCES INC. - COAL DIVISION - DESCRIPTIVE LOG PAGE 1

PROJECT: GDR BLOCK: GS DATA SOURCE: TRC81008

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	0.00	0.10	0.10			MUDSTONE	CARB.DK.GY.THNB ROOF.
	0.10	0.32	0.22			COAL	C-1 SHINY PIECES, EASILY BKN.
	0.32	0.42	0.10			MUDSTONE	CARB.DK.GY THN COALY LNS. FLOOR.

* DENOTES MEASURED BCA



534

Appendix C

LEGEND

	GOODRICH PROPERTY BOUNDARY
	TRENCH
"xx"-"xxx"-"99999"	"MAPPING BLOCK"-"DATA SOURCE TYPE"-"YEAR AND TRENCH NUMBER" (in this case, data source type = TRC, i.e. Trench)
GC	GOODRICH CENTRAL
GE	GOODRICH EAST
GS	GOODRICH SOUTH
LN	LOSSAN
MB	MOBERLY
WR	WHITERABBIT
9.99/9.99	COAL(metres) / COAL + ROCK(metres) - TRUE THICKNESS

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

GOODRICH COAL PROPERTY
Northeastern British Columbia
1983
TRENCH LOCATION MAP

SCALE 1:50,000 (c. 83-75-01)
PREPARED BY:
APPROVED BY: V. L. D DATE: DEC. 1983 DRAWING No. GDR-83-301