

MOUNT KLAPPAN COAL PROJECT
LOST - FOX AREA
GEOLOGICAL REPORT
1985

GEOLOGICAL REPORT



GULF CANADA LIMITED
COAL DIVISION

707

GULF CANADA LIMITED

Mount Klappan Coal Project Geological Report
Lost-Fox Area

1985

Coal Project Licence Numbers

7118 to 7177

7381 to 7392

7416 to 7432

7487 to 7539

7559 to 7561

and

7714 to 7757

Cassiar Land District

NTS Map Number 104 H

Latitudes Between 57° 06' and 57° 23'
Longitudes Between 128° 37' 30" and 129° 15'

Gulf Canada Limited

January, 1986

PREFACE

The Mount Klappan Coal Project is located in northwest British Columbia and is wholly owned and operated by Gulf Canada Limited.

The 1985 Lost-Fox Area Geological Report provides a current assessment of the geology, coal quality, and resource potential of the Lost-Fox Area, which is situated in the central region of the Mount Klappan property.

Table of Contents
MOUNT KLAPPAN COAL PROPERTY
LOST-FOX AREA
1985 GEOLOGICAL REPORT

	Page No.
PREFACE	
1.0 SUMMARY	1
2.0 RECOMMENDATIONS	4
3.0 INTRODUCTION	5
3.1 Mount Klappan Coal Project	5
3.1.1 Location	5
3.1.2 Access	5
3.1.3 Property Description	8
3.1.4 Ownership	8
3.1.5 Property Geography and Biophysical Environment	8
3.2 Lost-Fox Area	10
3.2.1 Location	10
3.2.2 Access	12
3.2.3 Area Description	12
3.2.4 Biophysical Environment	12
4.0 EXPLORATION HISTORY	14
4.1 Mount Klappan Property	14
4.1.1 Exploration Prior to Gulf's Acquisition	14
4.1.2 Summary of Exploration 1981-1984	15

TABLE OF CONTENTS - cont'd

	Page No.
4.2 Lost-Fox Area	17
4.2.1 Summary of Exploration 1981-1984	17
5.0 1985 EXPLORATION PROGRAM	19
5.1 Lost-Fox Area Program Objectives	19
5.2 Summary of Exploration	19
5.2.1 Mount Klappan Coal Project	19
5.2.2 Lost-Fox Area	22
5.3 Cartography	24
5.4 Geological Mapping	25
5.5 Trenching	25
5.6 Diamond Drilling	26
5.7 Rotary Drilling	28
5.8 Geophysical Logging	30
5.9 Trial Cargo	30
5.10 Additional Sedimentological Studies	31
5.11 Data Management	33
5.12 Reclamation	34
5.13 Exploration and Camp Permits	35
5.14 Project Management and Major Contractors	36
6.0 GEOLOGY	39
6.1 Introduction	39
6.2 Regional Geologic Setting	40

TABLE OF CONTENTS - Cont'd

	Page No.
6.3 Mount Klappan Coal Project Geology	44
6.3.1 Stratigraphy	44
6.3.1.1 Spatsizi Sequence	46
6.3.1.2 Klappan Sequence	46
6.3.1.3 Malloch Sequence	48
6.3.1.4 Rhondda Sequence	48
6.3.2 Structure	49
6.3.3 Fossil Flora and Fauna	51
6.3.4 Fossil Distribution and Paleoenvironmental Implications	51
6.3.4.1 Spatsizi Sequence	51
6.3.4.2 Klappan Sequence	53
6.3.4.3 Malloch Sequence	55
6.3.4.4 Rhondda Sequence	56
6.3.5 Age Implications of Fossil Distribution	57
6.3.6 Index Fossil Limitations	59
6.4 Lost-Fox Area Geology	61
6.4.1 Introduction	61
6.4.2 Klappan Sequence	62
6.4.3 Malloch Sequence	64
6.4.4 Coal Seam Development	65
6.4.4.1 Klappan Sequence	65
6.4.4.2 Malloch Sequence	75
6.4.5 Structure	76

TABLE OF CONTENTS - Cont'd

	Page No.
7.0 RESOURCES	79
7.1 Mount Klappan Coal Project	79
7.1.1 Summary	79
7.2 Lost-Fox Area	80
7.2.1 Summary	80
7.3 Procedures and Parameters	80
7.3.1 Introduction	80
7.3.2 Procedures	82
7.3.3 Parameters	86
7.3.3.1 Measured Resources	86
7.3.3.2 Indicated Resources	88
7.3.3.3 Inferred Resources	88
7.3.3.4 Speculative Resources	88
8.0 COAL QUALITY	89
8.1 Summary	89
8.2 Procedures and Parameters	89
8.2.1 Diamond Drilling Program	89
8.2.2 Trenching Program	90
9.0 REFERENCES	96
LIST OF FIGURES	
LIST OF TABLES	
LIST OF APPENDICES	

LIST OF FIGURES

Figure No.	Title	Page No.
3.1	Location Map	6
3.2	Property Access	7
3.3	Licences	9
3.4	Lost-Fox 1985 Exploration Area	11
6.1	Jurassic-Cretaceous Bowser Basin	41
6.2	Schematic Stratigraphic Column	45
7.1	1985 Resource Classification Scheme	87
8.1	Diamond Drill Core Analysis Flow Sheet	91
8.2	Trench Analysis Flow Sheet	94

LIST OF TABLES

Table No.	Title	Page No.
1.1	Coal Resource Summary	3
4.1	Mount Klappan Coal Project Exploration Summary 1981 to 1984	16
4.2	Lost-Fox Area Exploration Summary 1981 to 1984	18
5.1	Mount Klappan Coal Project Exploration Summary 1981 to 1985	20
5.2	Lost-Fox Area Exploration Summary 1981 to 1985	23
5.3	Lost-Fox Area 1985 Diamond Drill Hole Summary	27
5.4	Lost-Fox Area 1985 Rotary Drill Hole Summary	29
5.5	Lost-Fox Area - Key Stratigraphic Horizons	32
6.1	Regional Stratigraphy - Table of Formations	43
6.2	Mount Klappan Coal Property - Table of Formations	47
6.3	Stratigraphic Position of Fossil Fauna, Mount Klappan	52
6.4	Stratigraphic Position of Plant Macrofossils, Mount Klappan	54
6.5	Ages of Mount Klappan Plant Macrofossils in Other Western Canadian Formations	58
6.6	Mount Klappan Coal Property - General Trends of Fossil Distribution	60
6.7	Lost-Fox Area: Coal Seam and Carbonaceous Zone Summary	66
6.8	Lost-Fox Area: Summary of Diamond Drill Hole Coal Seams and Carbonaceous Zones	67-74

LIST OF TABLES - Cont'd

Table No.	Title	Page No.
7.1	Mount Klappan Coal Project Coal Resources	79
7.2	Lost-Fox Area Coal Resources	81
7.3	Drill Hole Seam Intersections Used in 1985 Resource Calculations	83
8.1	Average Diamond Drill Hole Raw Coal Quality by Seam	92
8.2	1985 Average Trench Coal Quality Analysis for I Seam	95

LIST OF APPENDICES

- Appendices Within Text -

- A. Statements of Qualifications
- B. Legal Description and Listing of Licences
- C. Distribution of Work by Licences
- D. Flora and Fauna Locations
- E. Resource Data and Calculations
- F. Survey Control Points

- Appendices External to Text -

- Appendix I Trench Data and Coal Quality ~~CONFIDENTIAL DATA REMOVED~~
Measured Sections
1985 Rotary Drill Hole Data
1:50 000 Maps

- Appendix II Geology Maps and Cross-Sections
Volume I: 1:2500 Maps and Cross-Sections
Volume II: 1:5000 Maps and Cross-Sections

- Appendix III 1985 Diamond Drill Hole Data (4 volumes)

- Appendix IV 1985 Diamond Drill Hole Coal Quality Data (3 volumes) ~~CONFIDENTIAL
DATA REMOVED~~

APPENDIX I

Trench Data and Coal Quality, Measured Sections, Rotary Drill Hole Data and 1:50 000 Maps

1985 Trench Data and Coal Quality (33 in total) ✓

Summary Sheet

Sample Summary Sheet

Data Source Summary

Data Sheet (1:47 scale)

Descriptive Log

Coal Quality Analyses (where available)

1985 Measured Sections (5 in total) ✓

Summary Sheet

Data Source Summary

Descriptive Log

Strip Log (1:200 scale)

1985 Rotary Drill Hole Data (6 in total) ✓

Summary Sheet

Data Source Summary

1:2 000 Schematic Profile

Descriptive Log

1:200 Strip Log

1:100 Geophysical Log

APPENDIX I - Cont'd

	Drawing No.
1985 1:50 000 Map Sheets	
1985 Geology Map	KPN85001 ✓
1985 Coal Resource Map	KPN85002 ✓
1985 Coal Licence Map	KPN85003 ✓
1985 Fossil Location Map	KPN85004 ✓
1985 Measured Section Location Map	KPN85005 ✓

APPENDIX II

Geology Maps and Cross-Sections

Drawing No.

Volume I

1:2 500 Maps:

Sheet D-4	KPN85LF-21
Sheet D-5	KPN85LF-22
Sheet D-6	KPN85LF-23
Sheet E-4 ✓	KPN85LF-24
Sheet E-5 ✓	KPN85LF-25
Sheet E-6 ✓	KPN85LF-26

1:2 500 Cross-Sections:

1000N ✓	KPN85LF-42
1250N ✓	KPN85LF-43
1500N ✓	KPN85LF-44
1750N ✓	KPN85LF-45
2000N ✓	KPN85LF-46
2250N ✓	KPN85LF-47
2350N ✓	KPN85LF-48
2500N ✓	KPN85LF-49
2650N ✓	KPN85LF-50
2750N ✓	KPN85LF-51

APPENDIX II - Cont'd

	Drawing No.
3000N ✓	KPN85LF-52
3250N ✓	KPN85LF-53
3350N ✓	KPN85LF-54
3500N ✓	KPN85LF-55
3750N ✓	KPN85LF-56
4000N ✓	KPN85LF-57

Volume II

1:5 000 Maps:

Map H-8	KPN85LF-61
Map H-9 ✓	KPN85LF-62
Map I-8	KPN85LF-63
Map I-9 ✓	KPN85LF-64
Map I-10 ✓	KPN85LF-65
Map J-8 ✓	KPN85LF-66
Map J-9 ✓	KPN85LF-67
Map J-10 ✓	KPN85LF-68
Map K-8 ✓	KPN85LF-69
Map K-9 ✓	KPN85LF-70

APPENDIX II - Cont'd

Drawing No.

1:5000 Cross-Sections:

5000S	KPN85LF-81
3000S	KPN85LF-82
1000S	KPN85LF-83
1000N ✓	KPN85LF-84
3000N ✓	KPN85LF-85
5000N ✓	KPN85LF-86

APPENDIX III
1985 Diamond Drill Hole Data

1985 Diamond Drill Holes (34 holes)

Data Source Summary
1:2000 Schematic Profile
Descriptive Log
Coal Seam Data Sheet
Stratigraphic Log ✓
Geophysical Log ✓
1:10 000 Drill Hole Location Map

Volume I ✓

KPNLRDDH85001
to
KPNLRDDH85007

Volume II ✓

KPNLRDDH85008
to
KPNLRDDH85015

Volume III ✓

KPNLRDDH85016
to
KPNLRDDH85023

Volume IV ✓

KPNLRDDH85024
to
KPNLRDDH85034

APPENDIX IV

1985 Diamond Drill Hole
Coal Quality Data

1985 Diamond Drill Hole Coal Quality (34 holes)

Data Source Summary

1:2000 Schematic Profile

Sample Summary

Coal Seam Data Sheet

Coal Quality Data

Volume I

KPNLRDDH85001

to

KPNLRDDH85011 ~~85011~~ 85020

CONFIDENTIAL COAL QUALITY DATA
HAS BEEN REMOVED

Volume II

KPNLRDDH85012 ~~85012~~ 021

to

KPNLRDDH85020 ~~85020~~ 026

Volume III

KPNLRDDH85021 ~~85021~~ 027

to

KPNLRDDH85034

1.0 SUMMARY

Gulf Canada Limited's Mount Klappan Coal Project is located in the Bowser Basin of northwest British Columbia, 288 kilometres north of Smithers, and 150 kilometres northeast of Stewart, British Columbia. The property is composed of 211 crown coal licences totalling 56 194 hectares of land.

The Mount Klappan property has been a focus of Gulf's coal exploration activities since 1981. Several areas with economic coal potential have been highlighted or further defined during each of the exploration programs undertaken since the acquisition of the property.

The Mount Klappan property has been subdivided into three project blocks: the Lost-Fox Area, the Hobbit-Broatch Area and the Summit-Nass-Skeena Area, the former to which this report pertains. A 1985 report covering exploration activities in the Summit-Nass Area has been completed as well. No exploration was initiated this year in the Hobbit-Broatch Area.

Encouraging results in terms of quantity, quality and accessibility of coal has provided a basis for increased attention to the Lost-Fox Area each year. Results from detailed geological mapping, hand and mechanical trenching, diamond and rotary drilling, as well as adit driveage, have contributed to the delineation of economic resource areas in the Lost-Fox Area. In 1982 a Mining Assessment of the area was completed and in 1985 Gulf prepared a Stage I submission to the Government of British Columbia with respect to the development of the Lost-Fox Area. A feasibility study and concurrent Stage II studies have subsequently been initiated for completion in 1986.

Combined exploration activity on the Mount Klappan property during 1985 comprised 34 diamond drill holes totalling 6 146 metres, 6 rotary drill holes totalling 620 metres, and 45 trenches totalling 178 metres. Geological mapping was completed at scales of 1:2 500, 1:5 000 or 1:10 000 depending on available detailed topographic base maps. In addition, new air photo coverage was produced for the Lost-Fox and Hobbit-Broatch Areas at scales of 1:8 000.

Trial cargoes of anthracite were extracted from the Lost-Fox Area during 1985, washed to various products and, as of the writing of this report, are being trucked to Stewart for shipment to markets in Europe, Asia and Eastern Canada.

The Mount Klappan property covers sedimentary strata ranging in age from Upper Jurassic to Lower Cretaceous. These strata are interpreted to have been subjected to two phases of structural deformation resulting in NW-SE trending folds of the first phase (F₁) and generally NE-SW trending folds of the second phase (F₂). More apparent within the first phase, thrust and minor normal faulting is associated with both phases of deformation. The Lost-Fox Area is well within this structural regime, and exhibits results of both deformation phases.

The sediments underlying the property have been subdivided into four sequences: the Spatsizi, Klappan, Malloch, and Rhondda, in ascending order. The Klappan Sequence is the main coal-bearing unit and is presently interpreted to attain a thickness of up to 900 metres. The Lost-Fox Area is predominantly underlain by strata of the coal-bearing Klappan Sequence.

Exploration diamond drilling in the Lost-Fox Area has delineated 25 unique coal and carbonaceous horizons within approximately 540 metres of Klappan Sequence section. Twenty of these horizons contain potentially mineable anthracite seams with true thicknesses ranging up to 6.75 metres.

The in-situ anthracite resource potential on the Mount Klappan property totals over 6 150 million tonnes, of which 52.3 million tonnes have been "measured" in the Lost-Fox Area. Table 1.1 below outlines the categorization of the in-situ resources.

Table 1.1
COAL RESOURCE SUMMARY
(million tonnes)

	Mount Klappan Property	Lost-Fox Area
Measured	69.4	52.3
Indicated	75.2	50.7
Inferred	491.0	86.1
Speculative	5 524.3	717.9
Total	6 154.9	907.0

The coal, which is of anthracite rank, can be cleaned to simultaneously produce a variety of sized products, ranging in ash content from 5% ash premium coals to briquetting coals of 25% ash or greater. The anthracite products are characterized by low sulphur values (usually 0.5%), high calorific values, and only traces of chlorine.

2.0 RECOMMENDATIONS

Geological interpretation of exploration data collected to date has identified several areas with potential for surface mineable coal resources in the Lost-Fox Area. Based on the results of the data assimilation and interpretation, the following recommendations are made:

1. Continue step-out diamond drilling south and southwest of Lost Ridge to further delineate the near-surface extent of seams H and I;
2. Step-out with diamond drilling east of Lost Ridge and beyond Fox Creek to confirm the presence of suspected coal-bearing strata along strike between the Lost-Fox and Hobbit-Broatch areas;
3. Expand and continue the detailed sedimentological and structural studies outlined in Section 5.10 of this report for use in seam identification and correlations as well as prediction of further areas of economic coal seam development.
4. Continue geological and coal quality data collection through drilling, mapping, trenching and bulk sampling in the central Lost-Fox Area.

3.0 INTRODUCTION

3.1 Mount Klappan Coal Project

3.1.1 Location

The Mount Klappan coal licences are situated in northwest British Columbia approximately 930 kilometres north of Vancouver, 150 kilometres northeast of Stewart and 530 kilometres northwest of Prince George (Figure 3.1).

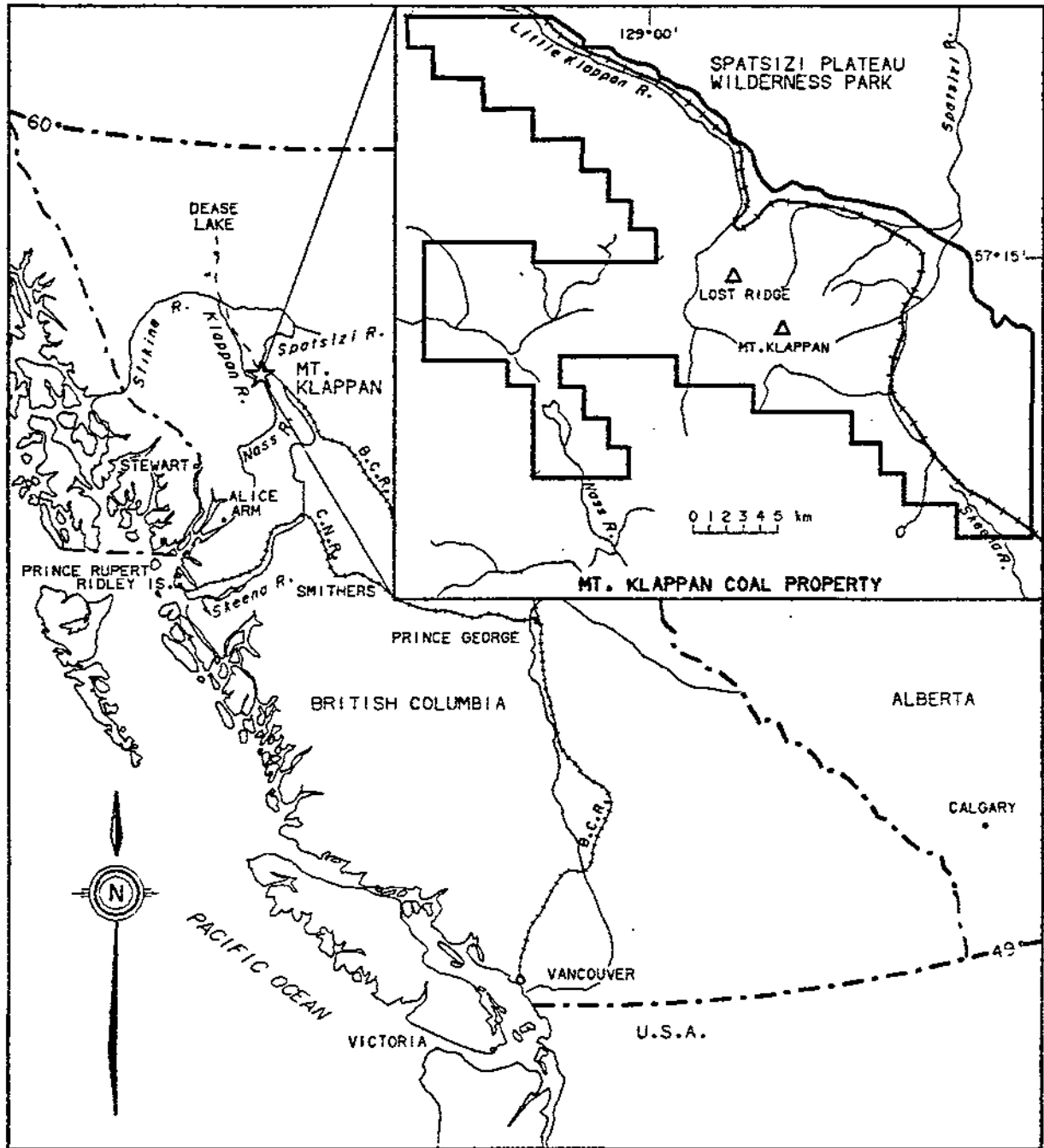
Geographically the coal licences are at the northern extremity of the Skeena Mountains between 57° 06' and 57° 23' north latitude, and 128° 37' and 129° 15' west longitude, and cover the headwaters of the Klappan, Little Klappan, Spatsizi, Skeena and Nass Rivers.

The nearest community to the property is the community of Iskut (population 500) located 100 kilometres to the northwest on the Stewart-Cassier Highway (Hwy 37).

3.1.2 Access

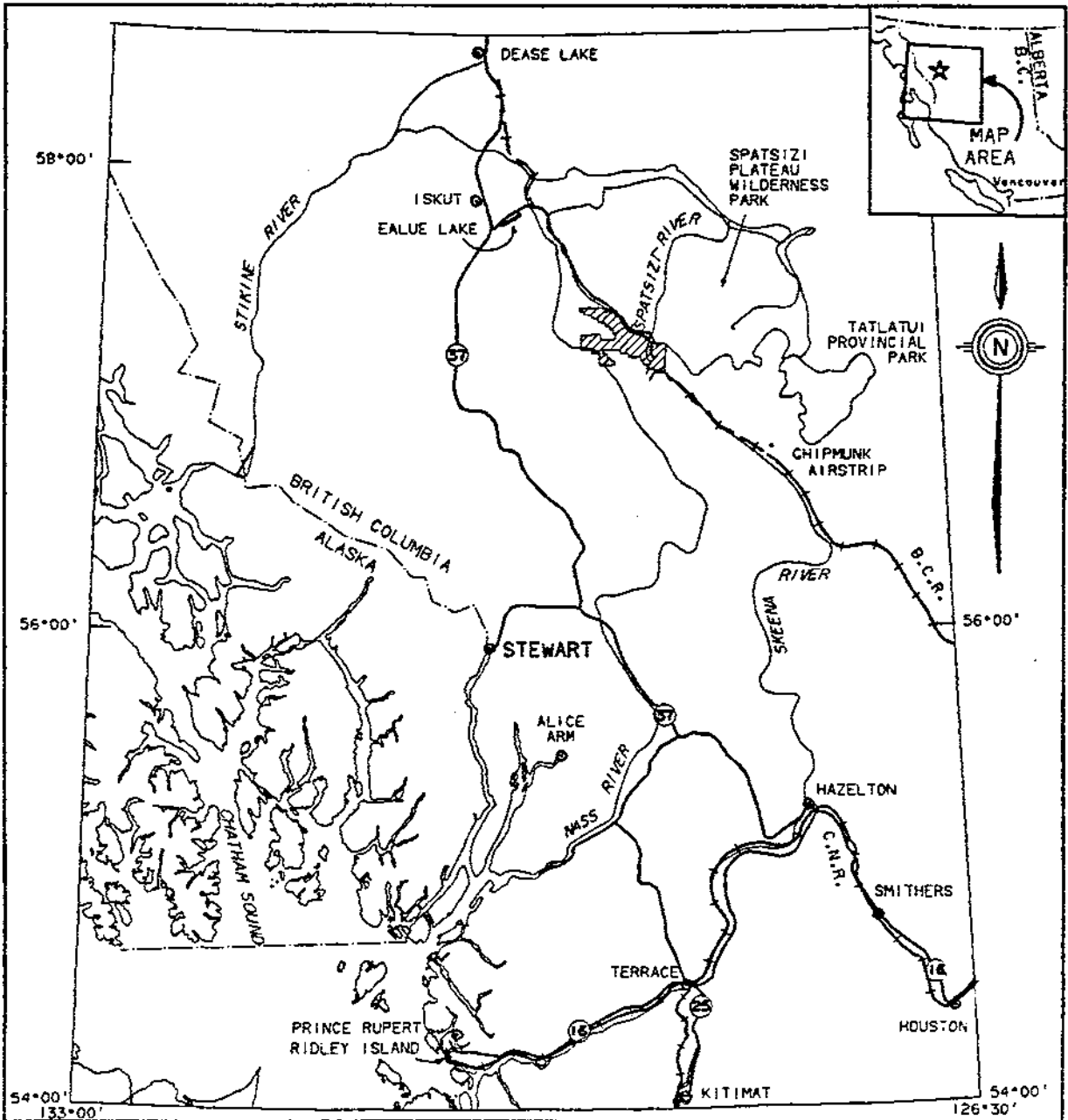
The Mount Klappan property straddles the partially completed British Columbia Railway line between Prince George and Dease Lake (Figure 3.2). Prior to cessation of work on the construction of the line, steel was laid to within 80 kilometres south of the property. With the exception of a 24 kilometre stretch north of the Kluatantan River, the railway

FIGURE 3.1
MOUNT KLAPPAN COAL PROPERTY
LOCATION MAP



<p>— MT. KLAPPAN LICENCE AREA</p>	<p>GULF CANADA RESOURCES INC. 10/01/85</p>
-----------------------------------	--

FIGURE 3.2 MOUNT KLAPPAN COAL PROPERTY PROPERTY ACCESS



<p>LEGEND</p> <ul style="list-style-type: none"> — ROAD ACCESS - - - EXISTING RAILWAY - - - EXISTING RAILWAY SUBGRADE ▨ MT. KLAPPAN LICENCE AREA 	<p>SCALE</p> <p style="text-align: center;">0 20 40 60 80 100 km</p> <p style="text-align: center;"> </p> <p style="text-align: right;"> </p> <p style="text-align: right; font-size: small;"> GULF CANADA RESOURCES INC. 12/02/85 </p>
---	--

subgrade was constructed through and beyond the property to the Stikine River just south of Dease Lake.

Road access to the property from Highway 37 via Ealue Lake Road, is provided along the British Columbia Railway subgrade. Three bridges were constructed along the subgrade early in 1984 to permit surface access to the property. Road distances from Terrace and Stewart to the property are 575 kilometres and 426 kilometres respectively.

Fixed wing aircraft provide access by air and use the 1000 metre Summit Airstrip located along the railway subgrade in the central region of the property.

3.1.3 Property Description

The Mount Klappan property comprises 211 coal licences totalling 56 194 hectares of land (Appendix I; Figure 3.3). The property was acquired in five separate applications from 1981 to 1985.

3.1.4 Ownership

Gulf wholly owns the coal licences comprising the Mount Klappan property.

3.1.5 Property Geography and Biophysical Environment

The Mount Klappan property is located at the headwaters of the Little Klappan, Klappan, Nass, Skeena, and

Spatsizi Rivers (Figure 3.1). This area is within the northern extremity of the Skeena Mountains physiographic region. The regional physiography is of mountainous terrain with broad northwest to southeast trending valleys of the aforementioned rivers.

Elevations on the property range from 991 metres in the Klappan River Valley to over 2000 metres on Mount Klappan and the adjacent ridge tops.

The climatic regime of the area is in the Northern and Central Plateau and Mountain Zone. Precipitation values average 300 to 400 mm per year with the mean daily temperatures comparable to Fort Nelson and Prince George. This information is derived from weather stations located on the northeastern edge of the property which have been monitored monthly since their installation four years ago.

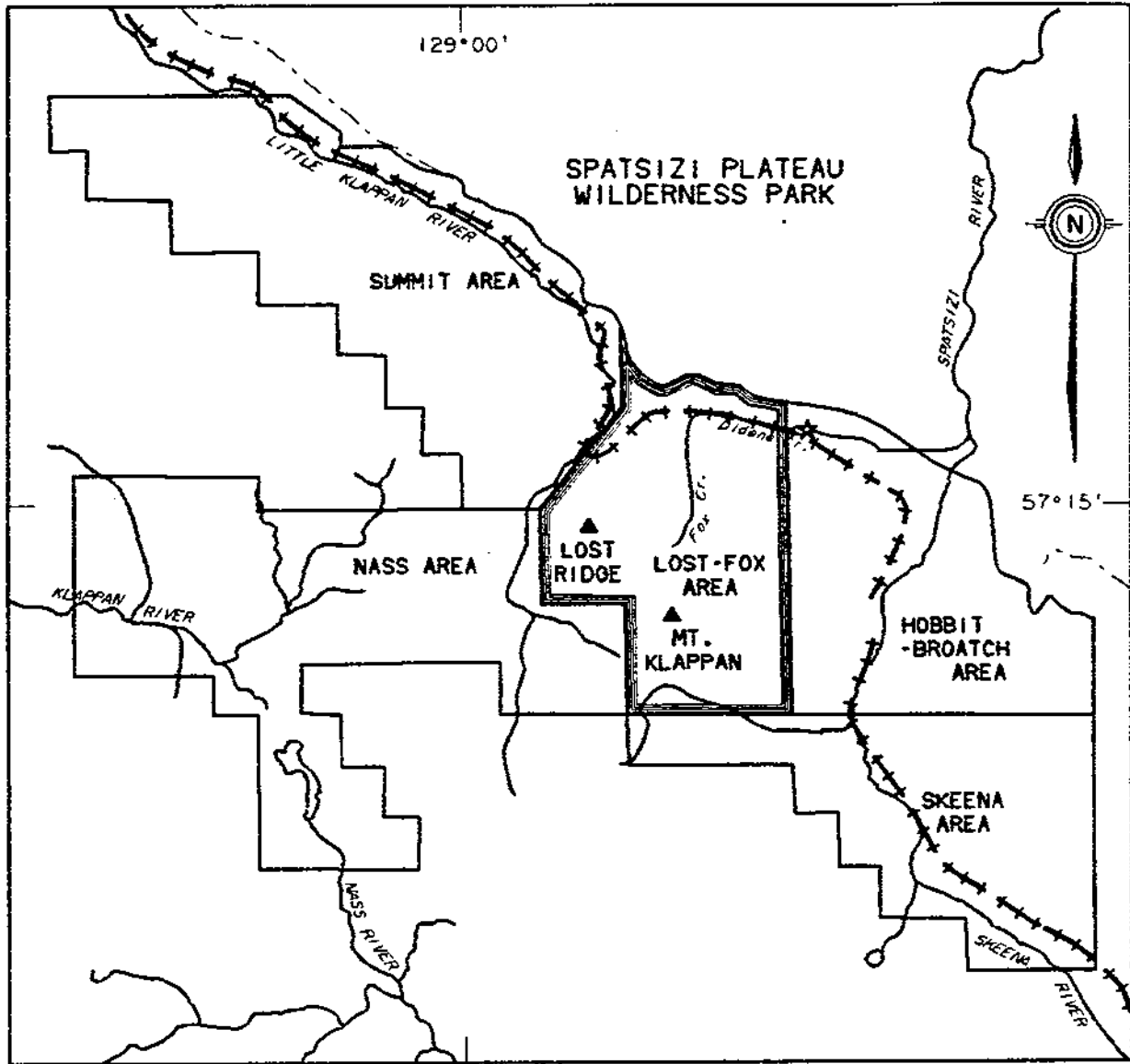
Tree line in the area is at approximately 1500 metres. Valley bottoms are partially covered with scattered coniferous forests, grasses, shrubs, meadows, and bogs. The higher elevations are characterized by alpine tundra.

3.2 Lost-Fox Area


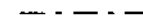


3.2.1 Location

The Mount Klappan property has been divided into project blocks to facilitate exploration expansion and subsequent logistics. (Figure 3.4). The Lost-Fox Area is

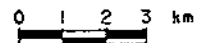
FIGURE 3.4
 MOUNT KLAPPAN COAL PROPERTY
 LOST-FOX
 1985 EXPLORATION AREA



LEGEND

-  PREPARED RAIL BED
-  PROVINCIAL PARK BOUNDARY
-  LICENCE AREA
-  DIDENE CREEK CAMP

SCALE



GULF CANADA RESOURCES INC.
 10/12/84



situated in the central region of the Mount Klappan property. Major geographic features included in the area are Lost Ridge, Mount Klappan and Fox Creek.

3.2.2 Access

The British Columbia Railway subgrade provides road access to the northern extremity of the Lost-Fox Area. A temporary winter road was constructed from the subgrade to the top of Lost Ridge to facilitate access during this year's winter drill program. This road was upgraded during the summer months to a coal haul road 8.0 kilometres in length. Where road access was not available, track-mounted vehicles were used to transport drill and support equipment and crews were flown in utilizing a Bell 206B Jet Ranger helicopter.

3.2.3 Area Description

The Lost-Fox Area covers 8 757.5 hectares and includes 35 of the 211 licences comprising the Mount Klappan Coal Project (Appendix B). Two licences, 7171 and 7173, are divided between the Lost-Fox Area and the Summit Area, the former being concerned with the southwest portion of each of those licences.

3.2.4 Biophysical Environment

With tree line at approximately 1 500 metres a.s.l., the Lost-Fox area is characterized by alpine tundra, grasses,

and shrubs, with swamps and some scattered coniferous stands at lower elevations.

The Mount Klappan massif influences the physical character of much of the area. The valley separating it from the second predominant feature, Lost Ridge, expresses the influence of Fox Creek, the major drainage in the Lost-Fox Area.

4.0 EXPLORATION HISTORY

4.1 Mount Klappan Property

4.1.1 Exploration Prior to Gulf's Acquisition

V.H. Dupont made the first published description of coal in the Northern Bowser Basin in 1900 for the Canadian Department of Railways and Canals (Figure 6.1). In his report, he describes a coal outcrop near the confluence of Didene Creek and the Spatsizi River. This outcrop is now recognized as part of the Klappan coal occurrences.

The Geological Survey of Canada has initiated five exploration programs into the area. The first, in 1911, was led by G.S. Malloch (Malloch, 1914) who undertook a geological evaluation of the Bowser Basin concentrating 55 miles to the south of Mount Klappan in the Groundhog Coal Measures. The second, in 1948, was led by Buckham and Latour (Buckham and Latour, 1950) which also concentrated in the Groundhog area. The third study in 1957 was called "Operation Stikine". The fourth and fifth programs, which broadly covered the Klappan coal measures, were led by Eisbacher in 1974 and in 1981. These studies resulted in some of the first stratigraphic and structural studies of the area. In addition, Eisbacher tried to relate the depositional history of the Bowser Basin to the tectonic history of the area.

In 1979, Richards and Gilchrist from the B.C. Department of Mines published stratigraphic studies primarily

in the Groundhog area. However, they also included reference to the coal sequences of the Northern Bowser Basin.

Further interest in the Klappan coal occurrences during the late 1970's resulted in both Esso Minerals and Petrofina acquiring licences in the area. These licences were allowed to lapse in 1980 following minimal geological exploration of the area.

Initially, Gulf entered the Bowser Basin in 1979 concentrating in the Panorama-Groundhog Coal Measures. This was followed in 1981 by the acquisition of the Mount Klappan property.

4.1.2 Summary of Exploration 1981-1984

Prior to 1985, Gulf undertook six separate exploration programs on the Mount Klappan property. The exploration included geological mapping, hand trenching, diamond drilling, rotary drilling and adit driveage, as summarized in Table 4.1. The results of these exploration activities have been documented in six separate reports:

Mount Klappan Coal Project - Geological Report	1981
Mount Klappan Coal Project - Geological Report	1982
Mount Klappan Coal Project - Geological Report	1983
Mount Klappan Coal Project - Lost-Fox Area	1984
Mount Klappan Coal Project - Hobbit-Broatch Area	1984
Mount Klappan Coal Project - Summit-Nass-Skeena Area	1984

Table 4.1

MOUNT KLAPPAN COAL PROJECT
EXPLORATION SUMMARY 1981 TO 1984

	1981	1982	1983	1984	Total
Adits					
Number	--	--	1	--	1
Tonnes	--	--	39.2	--	39.2
Diamond Drill Holes					
Number (HQ)	--	7	3	8	18
Total Metres	--	1 223	603	1 507	3 333
Number (AIX)	--	--	6	--	6
Total Metres	--	--	126	--	126
Rotary Drill Holes					
Number	--	--	--	17	17
Total Metres	--	--	--	897	897
Hand Trenching					
Number	24	51	93	95	263
Total Metres	89	289	527	416	1 321
Mechanical Trenches					
Number	--	--	--	128	128
Total Metres	--	--	--	1 041	1 041
Measured Sections					
Number	--	--	--	13	13
Total Metres	--	--	--	2 736	2 736
Geological Mapping					
Scales	1:10 000	1:10 000	1: 5 000 1:10 000	1: 2 500 1: 5 000 1:10 000	

4.2 Lost-Fox Area

4.2.1 Summary of Exploration 1981-1984

During each of the four exploration years prior to 1985, the Lost-Fox Area has received further investigation in the form of geological mapping and trenching with subsequent drilling and adit driveage after preliminary mapping results were assessed. Encouraging results in terms of quantity, quality and accessibility of coal, provided a basis for increased attention to the Lost-Fox Area each year. Each exploration program has supported a growing data base and has provided a continuing delineation of economic resource areas. The Lost-Fox Area exploration activities prior to those of the 1985 program are summarized in Table 4.2.

Table 4.2
 LOST-FOX AREA
 EXPLORATION SUMMARY 1981 TO 1984

	1981	1982	1983	1984	Total
Adits					
Number	--	--	1	--	1
Tonnes	--	--	39.2	--	39.2
Diamond Drill Holes					
Number (HQ)	--	1	2	4	7
Total Metres	--	244	411	1 017	1 672
Number (AIX)	--	--	6	--	6
Total Metres	--	--	126	--	126
Rotary Drill Holes					
Number	--	--	--	17	17
Total Metres	--	--	--	897	897
Hand Trenching					
Number	9	14	49	55	127
Total Metres	27	86	265	260	638
Mechanical Trenches					
Number	--	--	--	88	88
Total Metres	--	--	--	808	808
Measured Sections					
Number	--	--	--	5	5
Total Metres	--	--	--	1 368	1 368
Geological Mapping Scales	1:10 000	1:10 000	1: 5 000 1:10 000	1:2 500 1:5 000	

5.0 1985 EXPLORATION PROGRAM

5.1 Lost-Fox Area Program Objectives

In summary, the objectives of the 1985 Lost-Fox Area exploration program were:

1. To geologically map in detail all outcrop in the Lost-Fox Area where surface mineable resources were interpreted to exist;
2. To complete two in-fill diamond drill programs within the pit area, as outlined in the Stage I submission, to confirm previous interpretations and increase the resource category confidence level;
3. To initiate step-out drilling from the pit area into areas believed to have a good potential for additional surface mineable resources;
4. To reassess previous years' core and delineate potential marker horizons that would assist in drill hole seam determinations and correlations.

5.2 Summary of Exploration

5.2.1 Mount Klappan Coal Project

In five years of exploration programs on the Mount Klappan property, Gulf has advanced through regional investi-

Table 5.1

**MOUNT KLAPPAN COAL PROJECT
EXPLORATION SUMMARY 1981 TO 1985**

	1981	1982	1983	1984	1985	Total
Adits						
Number	--	--	1	--	--	1
Tonnes	--	--	39.2	--	--	39.2
Diamond Drill Holes						
Number (HQ)	--	7	3	8	34	52
Total Metres	--	1223	603	1507	6146	9479
Number (AIX)	--	--	6	--	--	6
Total Metres	--	--	126	--	--	126
Rotary Drill Holes						
Number	--	--	--	17	6	23
Total Metres	--	--	--	897	620	1517
Mechanical Trenches (Seam Tracing)						
Number	--	--	--	128	--	128
Total Metres	--	--	--	1041	--	1041
Hand Trenches						
Number	24	51	93	95	45	308
Total Metres	89	289	527	416	178	1499
Measured Sections						
Number	--	--	--	13	19	31
Total Metres	--	--	--	2736	3347	6083
Geological Mapping						
Scales	1:10 000	1:10 000	1:5 000	1:2 500	1:2 500	
			1:10 000	1:5 000	1:5 000	
				1:10 000	1:10 000	

gations to seam tracing, drilling, and adit driveage (Table 5.1). While new areas are constantly being investigated, exploration is being focussed on those areas which have immediate economic interest.

Both a winter and summer program were run during this past year. The winter program resulted in the completion of 15 diamond and 6 rotary drill holes in the Lost-Fox Area. A winter exploration road, about 8.0 kilometres in length, was constructed in late 1984 from the British Columbia Railway subgrade up the backside of Lost Ridge to provide truck and cat access to the central Lost-Fox Area. The Didene Creek Camp provided lodging and working space for up to 50 Gulf and support personnel during the program. Geological as well as drilling and support crews were transported to their work stations from camp via 4 x 4 vehicles. Drill equipment was skidded from site to site using either a D-6 or a D-8 Caterpillar and the rig was serviced by four-wheel-drive vehicles.

The summer program included geological mapping of the Lost-Fox, Summit and Nass Areas, initiation of a detailed core study, and drilling 19 diamond drill holes. Extraction of trial cargoes from the Lost-Fox Area was undertaken during the autumn, and at the time of writing, operations associated with this are ongoing.

The winter access road was upgraded to a year round haul road for the excavation program. This road provided easy access to the central Lost-Fox Area. Geological,

drilling and support crews were transported daily from camp either by four-wheel-drive vehicles or by a Bell 206B helicopter, depending on accessibility. Drill equipment was skidded from site to site using a D-6 Caterpillar and was serviced by either 4 x 4 vehicles or the Bell 206B.

To accommodate the expanded activities on the property, the Didene Creek Camp was enlarged to provide lodging and working space for up to 150 Gulf and support personnel.

The British Columbia Railway subgrade provided good access through the property, and joined with Highway 37 via the Ealue Lake Road (Figure 3.2). A four-wheel-drive Emergency Transportation Vehicle was on standby at all times for use in a medical emergency.

Commercial as well as charter fixed wing aircraft linked the Summit Airstrip on the property to major centres and provided convenient air transportation for personnel and cargo throughout the exploration program.

5.2.2 Lost-Fox Area

The exploration programs undertaken from 1981 to 1984 provided encouraging and supportive data for the continued definition of the coal resources of the Lost-Fox Area (Table 5.2). During the 1985 exploration program, the Lost-Fox Area received detailed investigations during two separate programs. The winter program was run between February 28 and

Table 5.2

LOST FOX AREA
EXPLORATION SUMMARY 1981 to 1985

	1981	1982	1983	1984	1985	Total
Adits						
Number	-	-	1	-	-	1
Tonnes	-	-	39.2	-	-	39.2
Diamond Drill Holes						
Number (HQ)	-	1	2	4	34	41
Total Metres	-	244	411	1017	6 146	7 818
Number (AIX)	-	-	6	-	-	6
Total Metres	-	-	126	-	-	126
Rotary Drill Holes						
Number	-	-	-	17	6	23
Total Metres	-	-	-	897	620	1 517
Mechanical Trenches						
Number	-	-	-	88	-	88
Total Metres	-	-	-	808	-	808
Hand Trenches						
Number	9	14	49	55	33	160
Total Metres	27	86	265	260	130	768
Measured Sections						
Number	-	-	-	5	5	10
Total Metres	-	-	-	1368	308	1 676
Geological Mapping						
Scales	1:10 000	1:10 00	1:10 000	1:5 000	1:5 000	
			1: 5 000	1:2 500	1:2 500	

April 13 and was restricted to diamond and rotary drilling. The summer program was run from May 24 to September 2 and involved diamond drilling, sedimentological studies (Section 5.10), geological mapping and hand trenching.

Simultaneous with the second program a small open pit excavation was undertaken for trial cargo extraction with a total of over 135 000 tonnes of anthracite mined (Section 5.9).

5.3 Cartography

Topographic maps at 1:5000 and 1:2 500 scales were used for plotting of exploration data and subsequent technical interpretation. The 1:5000 maps were produced from 1:30 000 British Columbia Government air photographs taken in 1971 prior to the construction of the BCR subgrade. Air photographs were taken over the Lost-Fox Area in September of 1984. Controlled topographic maps were then produced at a 1:2 500 scale by Western Photogrammetry and made available by the summer of 1985.

Ground control was enhanced this year as 188 points were surveyed:

- 39 Diamond Drill Holes
- 17 Rotary Drill Holes
- 6 Winkie Drill Holes
- 51 Trenches
- 51 Hubs (intermediate points)
- 19 Cairns
- 5 Additional Points

A detailed survey of the haul road and all elements concerned with the trial cargo was also maintained.

An additional set of 1:8 000 and 1:20 000 scale air photographs were taken on September 7, 1985 and, together with the improved ground control, have been used to produce topographic maps of the central Lost-Fox Area at a scale of 1:2 000 for use during upcoming programs.

The 1984 and 1985 survey data is located in Appendix F.

5.4 Geological Mapping

Detailed geological mapping of the Lost-Fox Area concentrated on the slopes of Lost Ridge and the upper elevations of Fox Creek. The program included the remapping of some areas for the purpose of recorrelation based on the results of a detailed core relogging study (Section 5.10).

Up to three two-person mapping teams contributed to the geological investigations in the area. Mapping was completed using triangulation or chain and compass and/or air photographic methods of traversing. The presence of abundant survey points on the southern slopes of Lost-Ridge improved the accuracy of plotted geological data points.

Detailed geological maps and cross-sections are provided in Appendix II. A 1:50 000 regional geology map is located in Appendix I with this text.

5.5 Trenching

During the 1985 Lost-Fox exploration program a total of 33

hand trenches were completed which amounted to 130 metres of excavation.

Trenching was completed by Gulf personnel either on routine traverses wherever coal spoil was found, or by a team whose assignment it was to hand dig trenches in prospective coal seams. Trenches were excavated at right angles to the slope where possible; overburden and topsoil were stockpiled separately and in most cases backfilled. Some trenches remain open for further investigation. All trenches were logged by Gulf geologists upon completion.

Most trenches were analyzed for coal quality; the data is discussed in Section 8.0 and the analytical results are provided in Appendix I. The remaining trench data, including descriptive logs and pictorial lithological logs can also be found in the same appendix.

5.6 Diamond Drilling

The diamond drilling phase of the 1985 Lost-Fox Area exploration program was completed in two separate programs. The spring drilling ran from March 6 to April 10 and consisted of 15 HQ diamond drill holes totalling 3 336 metres. The summer drilling ran from July 15 to August 7 and comprised 19 HQ drill holes totalling 2 810 metres. Each program utilized two Longyear 44 drill rigs and all holes were geophysically logged upon completion.

All drill core was lithologically logged by Gulf geologists,

Table 5.3

LOST-FOX AREA
1985 DIAMOND DRILL HOLE SUMMARY

Drill Hole	Easting (m)	Northing (m)	Elevation (m)	Length (m)	Inclination (°)	Azimuth	Licence Number
KPNLRDDH85001	507254.75	6345720.36	1 480.40	234.60	90.0		7169
KPNLRDDH85002	505875.08	6344198.77	1 836.40	102.97	90.0		7152
KPNLRDDH85003	506328.26	6344438.83	1 798.10	177.40	70.0	45.0	7151
KPNLRDDH85004	505875.08	6344198.77	1 836.40	250.60	85.0	225.0	7152
KPNLRDDH85005	506691.69	6344398.16	1 758.00	333.40	80.0	45.0	7151
KPNLRDDH85006	506101.03	6343993.37	1 764.90	262.60	90.0		7151
KPNLRDDH85007	506330.39	6344168.78	1 761.90	100.01	60.0	45.0	7151
KPNLRDDH85008	506349.58	6343920.56	1 732.10	151.40	60.0	225.0	7151
KPNLRDDH85009	506330.39	6344168.78	1 761.90	337.90	65.0	45.0	7151
KPNLRDDH85010	506920.88	6344570.68	1 752.70	231.80	90.0		7151
KPNLRDDH85011	507124.54	6344833.43	1 625.70	162.50	75.0	45.0	7151
KPNLRDDH85012	506131.44	6344660.47	1 666.40	263.30	80.0	10.0	7152
KPNLRDDH85013	506377.50	6344850.23	1 643.90	279.00	75.0	10.0	7152
KPNLRDDH85014	505606.69	6344886.30	1 605.40	250.60	70.0	20.0	7152
KPNLRDDH85015	505423.00	6344509.53	1 669.40	197.80	65.0	45.0	7151
KPNLRDDH85016	505928.47	6344868.48	1 633.75	322.40	75.0	10.0	7152
KPNLRDDH85017	506805.05	6344834.30	1 635.01	270.10	75.0	360.0	7169
KPNLRDDH85018	505469.90	6344973.20	1 592.70	275.10	60.0	10.0	7152
KPNLRDDH85019	506845.01	6345160.78	1 573.54	153.10	75.0	360.0	7170
KPNLRDDH85020	505449.58	6344003.25	1 820.10	162.30	75.0	225.0	7151
KPNLRDDH85021	505628.30	6345237.60	1 540.40	166.50	80.0	120.0	7151
KPNLRDDH85022	506630.09	6343550.01	1 678.40	180.50	90.0		7151
KPNLRDDH85023	506616.99	6344164.83	1 741.60	301.40	60.0	45.0	7151
KPNLRDDH85024	506360.30	6343684.79	1 709.50	153.60	90.0		7151
KPNLRDDH85025	506419.91	6343436.24	1 684.30	110.90	90.0		7151
KPNLRDDH85026	506857.07	6343430.75	1 641.90	90.60	90.0		7147
KPNLRDDH85027	506959.41	6343062.93	1 629.70	278.90	90.0		7151
KPNLRDDH85028	506256.55	6343175.48	1 668.60	80.00	90.0		7151
KPNLRDDH85029	506523.97	6343261.23	1 661.70	106.60	90.0		7152
KPNLRDDH85030	505778.33	6344306.42	1 826.20	31.50	90.0		7152
KPNLRDDH85031	505717.45	6344324.90	1 827.40	22.60	90.0		7152
KPNLRDDH85032	505843.57	6344291.86	1 825.00	41.20	90.0		7152
KPNLRDDH85033	506019.10	6344258.50	1 809.10	22.90	90.0		7152
KPNLRDDH85034	505908.17	6344261.43	1 819.70	40.30	90.0		7152

and all significant coal intersections were sampled for coal quality analyses. The coal quality is discussed in Section 8.0 and analyses results are provided in Appendix V. Table 5.3 summarizes the diamond drilling program statistics.

During both drill programs the drill rigs were skidded to and from all hole locations. The crews were helicoptered or drove to the various sites depending on accessibility. Crews operated on a two-shift, 24 hour per day basis, with a driller and helper on each shift. At the completion of the drilling program, the drill rigs were demobilized and left at the base camp on Didene Creek.

All drill hole locations were established using chain and compass or by using local exposures. Each drill hole has been surveyed and all are clearly indicated on geological maps and cross-sections. A drill hole location map and all diamond drill hole data are located in Appendix III.

5.7 Rotary Drilling

The rotary drilling activities of the Lost-Fox Area exploration program were completed during the winter program. A total of 620 metres were drilled in six holes and all holes were geophysically logged. Table 5.4 summarizes the rotary drilling program statistics. Chip samples were collected and were subsequently lithologically described. Drill equipment was mounted on 110 Nodwells which permitted easy travelling over all types of terrain and resulted in minimal disturbance. All drill hole locations were established using chain and compass. To date, two of the six holes have been surveyed. All drill holes are

Table 5.4

1985 ROTARY DRILL HOLE SUMMARY

Drill Hole	Easting (m)	Northing (m)	Elevation (m)	Length (m)	Inclination (°)	Azimuth	Licence Number
KPNLRRDH85001	505750.00	6347520.00	1 325.00	105.03	90.0		7173
KPNLRRDH85002	506060.00	6347170.00	1 355.00	105.25	90.0		7172
KPNLRRDH85003	505410.00	6346830.00	1 350.00	103.23	90.0		7170
KPNLRRDH85004	506310.00	6348490.00	1 295.00	97.03	90.0		7172
KPNLRRDH85005	504103.00	6344941.38	1 436.90	106.56	90.0		7153
KPNLRRDH85006	503281.31	6344103.97	1 425.70	102.30	90.0		7153

clearly indicated on all geological maps and cross-sections with this report. A drill hole location map and all rotary drill hole data are located in Appendix IV.

5.8 Geophysical Logging

Each diamond and rotary drill hole was geophysically logged upon completion. The logging equipment utilized has downhole digitizing capabilities and resulted in a suite of logs comprised of gamma, neutron and sidewall density. Due to poor down hole conditions, all geophysical logging tools were run through the drill rods. Prints of the geophysical logs, at a scale of 1:100, are included in Appendix III along with all drill hole data.

The logging equipment was comprised of two compact and portable units and required a Bell 206B helicopter for mobilization.

5.9 Trial Cargo

Test marketing of Mount Klappan anthracite began with the mining of 21 000 tonnes from the Hobbit-Broatch Area during the winter of 1984-85. Later in 1985, Gulf mined in excess of 135 000 tonnes from a small open pit excavation in the Lost-Fox mine area. The coal was processed through a pilot washplant utilizing heavy-media bath and water-only cyclones. The pilot plant was constructed during the months of July and August for this trial cargo operation.

The coal is currently being trucked to the port of Stewart, B.C., and loaded onto ships bound for customers in Europe, Eastern Canada and Korea.

5.10 Additional Sedimentological Studies

Increased attention to the Lost-Fox Area over the past three years has permitted the undertaking of various and extremely detailed geological investigations by providing an ever-broadening data base. The results of these ongoing studies have enabled confident seam identifications, correlations and even predictions. A thorough and complete understanding of the seam and interseam characteristics and continuity as well as the pattern of coal seam deposition for application to nearby resource areas, is the major objective of these studies.

Studies undertaken in previous years have been regional in scope and have drawn broad scale conclusions with regard to paleocurrent directions and general depositional environments. The studies conducted this year concentrated on the interpretation of specific small scale features, in drill core and outcrop, with the intent of extrapolating into the larger scale.

Prior to the commencement of the 1985 summer drill program, a detailed review of the diamond drill core was completed over a period of several weeks. This study emphasized the detection of environmental indicators and unique stratigraphic markers to assist in correlations between drill holes.

Typical lithologies and a number of key beds emerged that

TABLE 5.5

LOST-FOX AREA
KEY STRATIGRAPHIC HORIZONS

Seam	Marker Horizon	Description
P D/P D Nu	Crest Zone	Thick white ash layer (>20 cm); in distinct contrast with dark mudstone above and below; marks a point 10-15 cm above N seam.
N M/N M L/M L K/L K	Coaster Zone	Varved, extremely fissile dark grey mudstone; marks occurrence of J seam zone which always lies immediately beneath the Coaster Zone.
J I H/I H	Tuffite Zone	Variable thickness containing a mixture of tuffaceous material and siltstone; normally has a sharp base and gradational top; occurs always in association with I seam but at a variable stratigraphic level above it.
PH Gu G G1 F/G	Recrystallized Zone	Diagenetic recrystallization of carbonate in mudstone; sensitive to facies but occurs widely within 10 m below H seam.
F E D	Milky Way Zone	Mudstone speckled with dispersed angular white quartz clasts; variable in thickness and abundance of quartz clasts; marks a point 12 m above F seam.
C B	Gastropod Zone	Gastropods occur only in a very restricted portion of the coal sequence; several thin bands densely packed with gastropods can occur above and below D seam (mostly below); bivalves are found in association.

demonstrated a reliable consistency of character and occurrence across the Lost-Fox Area. A summary of the key marker beds and their relative stratigraphic positions is outlined in Table 5.5. The success of this core study has resulted in a stronger understanding and correlation of Klappan Sequence coal seams.

Further scope for this ongoing study will include extensive trend analyses including lithologic characteristics, elements of coal quality and variations in log signatures of various seams. The ultimate objective will be to delineate the paleogeography of the environment of deposition for each coal seam to guide further exploration.

An ongoing study on "bentonites" or layers presumed to be products of volcanic ash will continue into 1986. These beds occur at several horizons in drill core and have been found up to 20 kilometres north of the property centre. A large number of samples have been collected in hopes that a geochemical "fingerprint" can be determined that could extend stratigraphic control across facies boundaries and throughout the property.

The results of two years of flora and fauna studies have given valuable depositional environment information and have narrowed the age dating of the various stratigraphic sequences on the property. Details on this study are presented in Section 6.3.

5.11 Data Management

Throughout the 1985 exploration program, an HP 9816 microcom-

puter was utilized for cost accounting and budget control. During the field season, it also served as an on site data storage system which facilitated the subsequent and immediate uploading of outcrop, trench, and drill hole data onto Gulf's mainframe Coal Data Base set up on an AMDAHL V8 computer in Calgary. Coal quality data was also stored in the Coal Data Base. System 2000 data base management and Act 1 software provided the tools for data entry, retrieval and manipulation on the main frame computer.

5.12 Reclamation

All aspects of the two drilling programs on the Lost-Fox Area resulted in minimal disturbance during the 1985 exploration program. The diamond drilling program used Caterpillars for rig transportation and each of the thirty-four sites was cleared of equipment and garbage upon completion of drilling. As each of the sites was at or above tree line, no significant clearing of sub-alpine trees was undertaken.

The winter rotary drilling program utilized nodwell-mounted (track) vehicles which are designed for off-road transport. These vehicles resulted in minimal disturbance due to the wide tracks over which their load was distributed. No site preparation was required for the rotary holes and each site was cleared of drilling equipment and garbage upon completion of drilling.

Hand trenching operations resulted in minimal disturbances with trenches being excavated at right angles to the slope where possible; overburden and topsoil were piled separately and later backfilled. Some trenches remain open for further investigation.

Government approvals were obtained to construct an 8.0 kilometre winter access road into the central Lost-Fox Area before the first 1985 drill program. As the Lost-Fox trial cargo proceeded, this road was resurfaced using waste rock from the pit area.

The Didene Creek Camp was expanded to meet the needs of a larger operation during the summer program. Some additional leveling was required. Approved gravel was obtained to provide a suitable septic drainage area next to the camp, within the guidelines set out in the Health Act. All garbage was burned in an approved incinerator located a regulation distance from the camp.

In accordance with government regulations a report is being prepared regarding reclamation activities and will be available in a separate report in the spring of 1986.

5.13 Exploration and Camp Permits

Approvals for the 1985 exploration programs on the Mount Klappan property were received following submission of Coal Exploration Forms 6 and 7 to the Government of British Columbia. Subsequently, the following permits/approvals were issued to Gulf with respect to the Mount Klappan Coal Project 1985 exploration program:

Name	B.C. Ministry of
Reclamation Permit C-160	Energy, Mines and Petroleum Resources

Free Use Permit 12592	Forests
Waste Management PR-7332	Environment
Water Management A61-14	Environment
Class A Burning Permit 007957A	Forests
Inspection Report C-160	Energy, Mines and Petroleum Resources

5.14 Project Management and Major Contractors

The Mount Klappan Coal Project was managed by V.L. Duford, P. Geol., Coordinator - Coal Geology, Gulf Canada Limited.

The following professional and technical personnel contributed to the Lost-Fox Area 1985 exploration program:

E. Swanbergson	Project Geologist (summer)
C. Williams	Project Geologist (winter)
J. Innis	Senior Geologist
K. Jenner	Geologist
E. Legresley	Geologist
S. M. McKenzie, P. Geol.	Geologist
J. Thumult	Geologist
M. Barker	Geologist
B. W. Glover	Geologist
S. MacLeod	Geologist
L. Savoie	Geologist
B. Van den Bussche	Geologist
K. Foellmer	Geologist
B. Buhay	Geologist

B. M. Leece, P.Eng.	Senior Engineer-Mining
K. Fujita, P.Eng.	Coal Preparation Engineer
S. Hadley, E.I.T.	Coal Preparation Engineer
E. McQuarrie	Geotechnical Assistant
A. Sali	Administrator
T. Sampietro	Camp Manager
C. Earle	Bookkeeper
C. Boyko	Secretary
C. D. Ireland	Secretary
K. Groves	Geological Assistant
K. Hunter	Geological Assistant
A. Ledda	Geological Assistant
S. Lee	Geological Assistant
J. Lemon	Geological Assistant
M. Newcomen	Geological Assistant
L. Stewart	Geological Assistant

A condensed list of those companies that provided services and/or supplies to the exploration program is presented below.

Canadian Freightways Ltd.	Calgary, Alberta
Central Mountain Air Services Ltd.	Smithers, B.C.
Century Geophysical Corp. of Canada	Calgary, Alberta
D.G.E. Construction and Drilling Ltd.	Calgary, Alberta
Gulf Canada Ltd.	Terrace, B.C.

Higgins Lake Contractors	Dawson Creek, B.C.
I.C.G. Liquid Gas Ltd.	Terrace, B.C.
J.T. Thomas Diamond Drilling Ltd.	Smithers, B.C.
Kenn Borek Air	Calgary, Alberta
Loring Laboratories	Calgary, Alberta
McElhanney Surveying and Engineering Ltd.	Vancouver, B.C.
Neville Crosby Inc.	Vancouver, B.C.
Northern Mountain Helicopters Inc.	Prince George, B.C.
Northmount Camp Services (1975) Ltd.	Vancouver, B.C.
Pacific Western Airlines	Vancouver, B.C.
Starr Industries Ltd.	Fort St. John, B.C.
Terrace Totem Ford	Terrace, B.C.
Tom and Jerry's Construction Ltd.	Edson, Alberta
Trans-Provincial Airways	Terrace, B.C.
Westcan Electronic Services Ltd.	Calgary, Alberta
Western Photogrammetry	Edmonton, Alberta

6.0 GEOLOGY

6.1 Introduction

Geological mapping and hand trenching activities were undertaken in the Summit, Nass and Lost-Fox areas of the Mount Klappan property during the 1985 exploration program. In addition, rotary drilling, diamond drilling and trial cargo operations proceeded on the Lost-Fox Area. The results of this exploration program combined with previous years' work provided the basis for geological interpretations presented in this report.

The Mount Klappan property is underlain by uppermost Jurassic to Lower Cretaceous strata which consist of marine to non-marine sediments deposited in the Bowser Basin of northcentral British Columbia. The strata have been subjected regionally to two successive non-coaxial phases of deformation, F_1 and F_2 , which resulted in folding and faulting trending in NW-SE (F_1) and E-W (F_2) directions generally. (See 1:50 000 Regional Geology Map located in Appendix I).

The coal seams of the Mount Klappan property occur primarily in the Klappan Sequence; in addition, some minor seams have been trenched in the Malloch Sequence. Coal seams range up to 6.75 metres in maximum true thickness in the Lost-Fox Area and are usually found to be laterally continuous over broad areas although some seams thin locally.

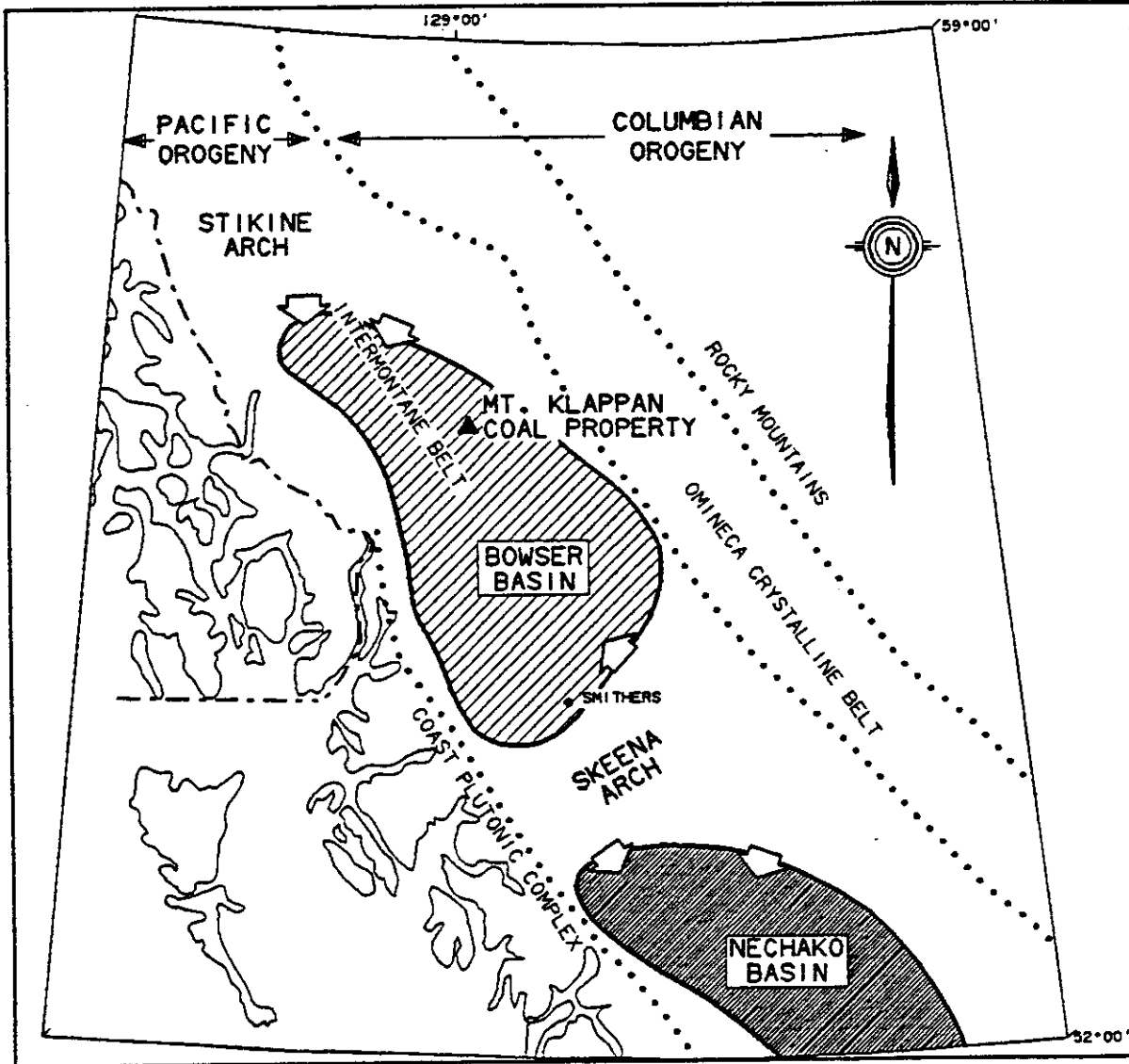
6.2 Regional Geologic Setting

The coal measures of the Mount Klappan property are contained within a series of sediments ranging in age from uppermost Jurassic to Lower Cretaceous. These sediments were deposited in the Bowser Basin, a successor basin to the volcanogenic Hazelton Trough (Tipper and Richards 1976). The Bowser Basin is bounded to the north and south by the Stikine and Skeena Arches respectively, and to the east by the Columbia Orogen (Omineca Crystalline Belt). The western margin is thought to have been open to the sea at the time of Bowser sediment deposition (Figure 6.1).



The formation and development of the Bowser Basin was controlled by the "collision and subsequent isostatic uplift of several crustal blocks in the Cordilleran Orogen of western Canada" (Eisbacher, 1981). These crustal blocks include the Stikine Terrane (volcanic arc complex) which directly underlies the Bowser sediments, the Atlin Terrane (remnant oceanic crust) and the Omineca Crystalline Belt (western margin of the North American Craton).

During the Middle Jurassic, the Skeena Arch was uplifted and the subsidence of the Stikine Terrane divided the Hazelton Trough into the Bowser Basin to the north and the Nechako Basin to the south. Uplift of the Atlin Terrane to the north and northeast of the Bowser Basin, coupled with continued subsidence of the Stikine Terrane and collision and suturing of both these terranes with the

FIGURE 6.1
MOUNT KLAPPAN COAL PROPERTY
 JURASSIC-CRETACEOUS BOWSER BASIN

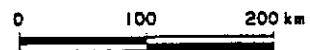


LEGEND

-  BOWSER BASIN
-  NECHAKO BASIN

(AFTER TIPPER AND RICHARDS, 1976)

SCALE



GULF CANADA RESOURCES INC.
 15/06/84



Omineca Crystalline Belt (Eisbacher, 1981) resulted in a progradation of non-marine over marine sediments within the basin.

Paleocurrent measurements indicate a centripetal flow into the Bowser Basin from highlands to the north, northeast, and south.

Bowser sediment source rocks originate within the Atlin Terrane (high chert; low volcanic content) for the north and northeastern margins of the Basin, and from the remnant volcanic arc assemblage of the Stikine Terrane, (high volcanic; low chert content) for the southern portion of the Basin. Sediments from the Lower Cretaceous (youngest marine succession of the Bowser Basin) through to the Paleocene are found only on the eastern, and in part, the southern margins of the Basin.

Geologic studies in the southern and northern Bowser Basin sediments have resulted in several reports and descriptions of the sedimentary package associated with the Mount Klappan Area. These studies are summarized in Table 6.1.

Structural deformation of Bowser Basin sediments resulted from intermittent tectonic stresses at the western cratonic margin from Cretaceous to recent time. The deformation caused an extensive, shallow decollement, recumbent folds, and local thrust faults extending a few kilometers along strike (Eisbacher, 1976).

TABLE 6.1
MOUNT KLAPPAN COAL PROPERTY
REGIONAL STRATIGRAPHY - TABLE OF FORMATIONS

		<i>MALLOCH, 1914</i>	<i>BUCKHAM & LATOUR, 1950</i>	<i>SOUTHER & ARMSTRONG, 1966</i>	<i>EISBACHER, 1974c</i>	<i>TIPPER & RICHARDS, 1976</i>	<i>RICHARDS & GILCHRIST, 1979</i>	<i>BUSTIN & MOFFAT, 1983</i>
		SOUTHERN GROUNDHOG COALFIELD	GROUNDHOG COALFIELD	NORTHERN BRITISH COLUMBIA	NORTHERN BOWSER BASIN	SOUTHERN BOWSER	SOUTHERN GROUNDHOG COALFIELD	GROUNDHOG COALFIELD
CRETACEOUS	UPPER			SUSTUT- SIFTON ASSEMBLAGE	SUSTUT- SIFTON ASSEMBLAGE	SUSTUT GROUP		
	LOWER	SKEENA SERIES	HAZELTON GROUP	UPPER PART	BOWSER ASSEMBLAGE	JENKINS CREEK FACIES	SKEENA GROUP	DEVILS CLAW UNIT
		GUNANOOT- GROUNDHOG FACIES				GUNANOOT ASSEMBLAGE		
JURASSIC	UPPER	HAZELTON GROUP	LOWER PART		DUTI RIVER SLAMGEESH FACIES		BOWSER LAKE GROUP	JACKSON UNIT
	MIDDLE			TAKLA- HAZELTON ASSEMBLAGE	TAKLA- HAZELTON ASSEMBLAGE	HAZELTON GROUP		
	LOWER						TAKLA GROUP	
TRIASSIC	UPPER							
	MIDDLE							

	GULF CANADA RESOURCES INC. 18/12/85 
--	---

The large scale forces resulting from collision of a remnant volcanic arc and cratonic margin subjected the area to northeast-southwest compression (F_1) creating the general structural trend of northwest-southeast.

Later position of the former volcanic arc terrain northwards along interlaced right lateral high angle faults (Eisbacher, 1981) may account for the later north-south compressional (F_2) event. This deformation event resulted in generally broad, open NE to SW trending folds with relatively rare, flat lying thrusts expressed in several Klippen fault structures.

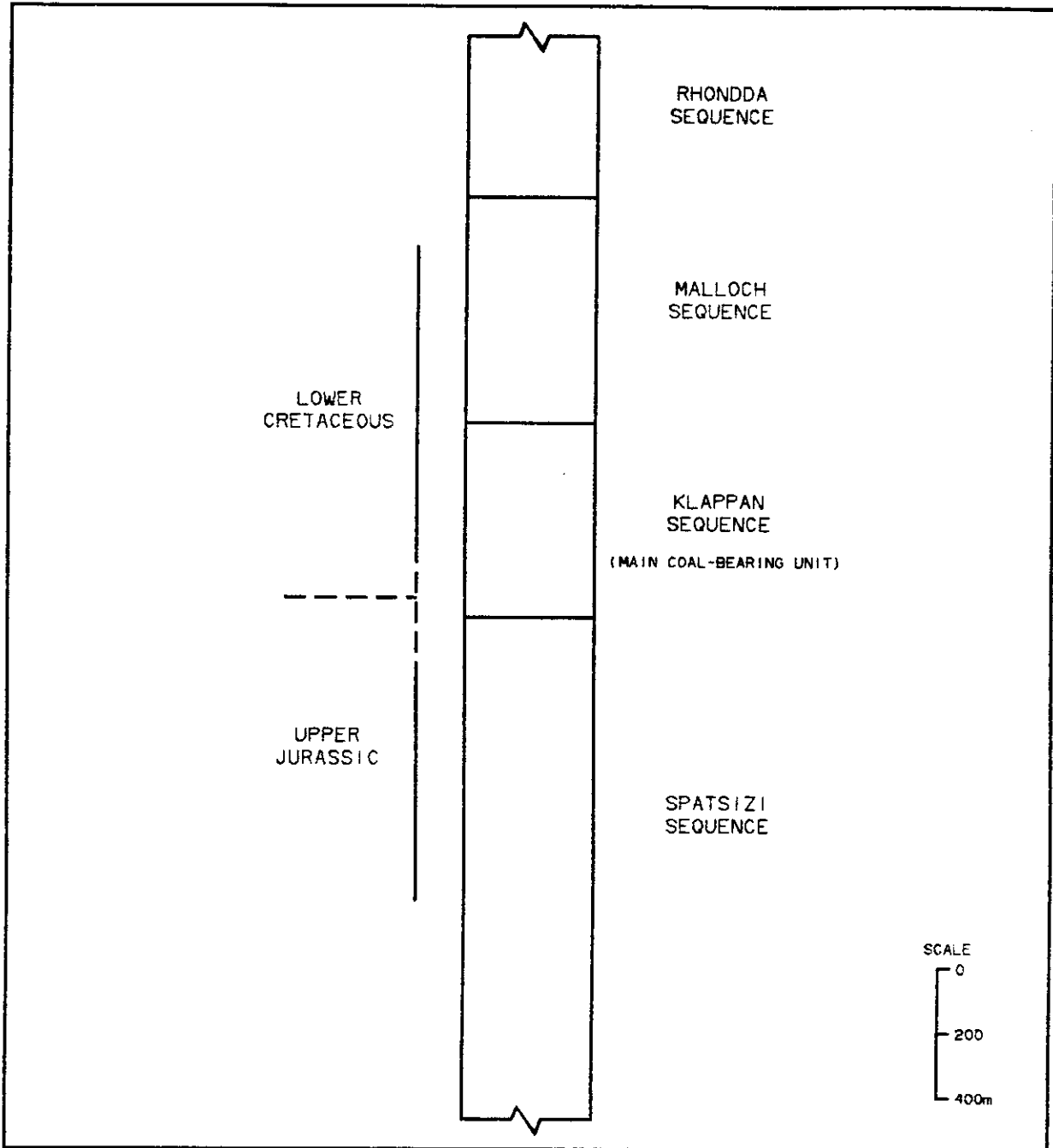
The final deformational event which produced strike-slip and some dip-slip faulting may have resulted from a change in the rotational component of the western crustal block, terminating compression.

6.3 Mount Klappan Coal Project Geology

6.3.1 Stratigraphy

Based on age-dating of collected species of plant macrofossils and fauna, the sediments underlying the Mount Klappan property range from uppermost Jurassic to Lower Cretaceous in age (Section 6.3.3). This sedimentary package has been subdivided into four gradational sequences which in ascending order are the Spatsizi, Klappan, Malloch and Rhondda sequences (Figure 6.2). These conformable sequences occur within approximately 3 000 metres of section and

FIGURE 6.2
MOUNT KLAPPAN COAL PROPERTY
SCHEMATIC STRATIGRAPHIC COLUMN



represent a gradual marine regression. Table 6.2 briefly outlines the sedimentological characteristics observed within each sequence.

6.3.1.1 Spatsizi Sequence

The Spatsizi Sequence is the lowest stratigraphic unit within the Mount Klappan property. Approximately 600 metres of this section has been measured and although the base has not been observed the stratigraphic thickness is estimated to be in excess of 1 200 metres. Interbedded mudstones, siltstones and sandstones are found throughout the sequence while thin coal seams and massive conglomerates exist within the upper portion. The overall trend is a coarsening upward sequence with marine conditions throughout and increasing coastal environment influences toward the upper transitional contact with the Klappan Sequence.

Exposures of the Spatsizi Sequence are located in the western and northern Summit Area and in the northern Nass Area of the Mount Klappan property.

6.3.1.2 Klappan Sequence

The Klappan Sequence, the main coal-bearing unit, conformably overlies the Spatsizi Sequence and occurs over the majority of the property. It represents a transition from marine conditions, at the

TABLE 6.2
MOUNT KLAPPAN COAL PROPERTY
TABLE OF FORMATIONS

Kr **RHONDDA SEQUENCE**

SEQUENCE OF THICK CHERT PEBBLE CONGLOMERATES AND MINOR GRITTY SANDSTONES INTERBEDDED WITH AN INCREASING NUMBER OF SILTSTONES AND MUDSTONES TOWARDS THE BASAL CONTACT. LARGE SCALE TROUGH AND TABULAR CROSS BEDS ARE COMMON. SIX SPECIES OF PLANT FOSSILS INCREASE IN ABUNDANCE TOWARDS THE BASE OF THE SEQUENCE.

Km **MALLOCH SEQUENCE**

THICK INTERBEDS OF MUDSTONES, ARGILLACEOUS SILTSTONES, FINE GRAINED SANDSTONES AND THIN INTERBEDS OF ORANGE WEATHERING NODULAR SILTSTONES. MANY CONGLOMERATE BEDS DISPLAY LARGE SCALE CROSS BEDDING AND TEND TO BE LATERALLY DISCONTINUOUS. THICK CLEAN SANDSTONE BEDS AND THIN COAL SEAMS INCREASE IN ABUNDANCE TOWARDS THE BASAL GRADATIONAL CONTACT. TWENTY SPECIES OF PLANT FOSSILS EXIST WITHIN THE SEQUENCE. BIVALVES ARE RARE.

JKk **KLAPPAN SEQUENCE (MAIN COAL-BEARING UNIT)**

FINE TO COARSE GRAINED SANDSTONES INTERBEDDED WITH MUDSTONES, SILTSTONES, OCCASIONAL THIN BANDS OF ORANGE WEATHERING CALCAREOUS SILTSTONES, CONGLOMERATES AND ABUNDANT COAL SEAMS. CONGLOMERATE BEDS GRADE LATERALLY INTO SANDSTONE. SANDSTONES OFTEN DISPLAY TABULAR OR TROUGH CROSS BEDDING. RHYTHMITES OCCUR IN THE MIDDLE OF THE SEQUENCE. TWENTY-THREE SPECIES OF BIVALVES AND TWENTY-TWO SPECIES OF PLANTS OCCUR THROUGHOUT. PETRIFIED WOOD AND RARE COQUINA MAY BE PRESENT TOWARDS THE UPPER CONTACT.

Js **SPATSIZI SEQUENCE**

PREDOMINANTLY A MARINE SEQUENCE OF INTERBEDDED MUDSTONES, SILTSTONES, SANDSTONES AND CONGLOMERATES. CARBONACEOUS MUDSTONES, THIN COAL SEAMS AND CHERT PEBBLE CONGLOMERATES ARE MORE ABUNDANT IN THE UPPER PART OF THE SEQUENCE. NINETEEN SPECIES OF BIVALVES ARE PRESENT. BELEMNITES ARE RARE. PLANT DEBRIS MAY OCCUR NEAR THE UPPER GRADATIONAL CONTACT.



base of the unit, to more coastal influenced sediments toward the top. The stratigraphy consists of cyclic packages of interbedded fine to coarse-grained sandstones, siltstones, mudstones, laterally discontinuous conglomerates and abundant coal seams. At least 25 coal horizons with seam true thicknesses up to 6.75 metres exist within the Klappan Sequence. The sequence is interpreted to attain a thickness of up to 900 metres.

6.3.1.3 Malloch Sequence

The Malloch Sequence conformably overlies the Klappan Sequence and outcrops in the central, western and southeastern areas of the property. The strata consist of interbedded argillaceous sandstone, siltstone and mudstone with the development of thin coal seams towards the base of the sequence. Chert pebble conglomerates are laterally discontinuous. Approximately 700 metres of Malloch Sequence is exposed within the Klappan property.

6.3.1.4 Rhondda Sequence

The Rhondda Sequence is the youngest stratigraphic package on the Mount Klappan property and has a gradational and conformable contact with the underlying Malloch Sequence. Outcroppings of the Rhondda are restricted to the southeast of the property in the Skeena Area. Lithologically this unit

consists of thick, laterally extensive chert pebble conglomerates. Thin interbeds of sandstones, siltstones and mudstones increase in thickness towards the bottom of the sequence. The top of the Rhondda has not been observed but approximately 500 metres of exposed section exists within the Mount Klappan property. It is interpreted that the Rhondda Sequence represents a prograding alluvial fan system over a transitional coastal-marine environment.

6.3.2 Structure

Deformation of sediments within the Mount Klappan property is the result of two phases of non-coaxial stress which postdate sediment deposition. The dominant structural features are the Beirnes Synclorium and the Nass River Anticlinorium, both of which trend northwest to southeast. These major folds and associated structures are a result of the first deformational phase, F_1 . On the Mount Klappan property the synclorium axis can be observed in the competent Rhondda strata as a broad, open upright feature. Folds to the east of the synclorium have axes which dip westward while folds west of the synclorium have easterly dipping axes. A single anticlinorium axis cannot be observed. Instead the exposed anticlinorium lies within less competent Malloch strata where folds are inconsistently upright and overturned.

Pervasive F_1 cleavage is well developed in all fine

grained lithologies. It has been observed as both axial plane divergent and convergent cleavage and trends at 135 degrees.

Only minor southwest dipping thrusts with displacements of tens of metres are associated with the first deformational event.

The second deformational phase, F_2 , primarily produced low amplitude, long wavelength folds trending northeast - southwest. Very localized tight, overturned fold styles of F_2 generation have also been observed. The overprinting of second stage folds onto the original deformational phase is seen as a series of plunge reversals averaging from 8 to 10 degrees to the northwest and southeast.

Several north - south trending, high angle normal faults with displacements of one to thirty metres are attributed to a structural event which occurred later than those previously described. Large fracture zones trending east - west are also believed to be part of this younger event.

F_2 generation cleavage can be seen in most fine grained lithologies. It fans both outward and inward with respect to the axial plane of the fold with varying trends from 30 to 110 degrees.

6.3.3 Fossil Flora and Fauna

During the 1984 and 1985 field seasons a minimum of 476 specimens of fossil flora and fauna were collected from 235 sites on the Mount Klappan property during routine traverses and the drill core logging program. Forty-seven species of fossil fauna and nineteen species of plant macrofossils were collected, described and identified with the purpose of aiding in stratigraphic delineation and correlation, age determination and paleoenvironmental interpretations. Map KPN85004 in Appendix I documents all collection sites.

6.3.4 Fossil Distribution and Paleoenvironmental Implications

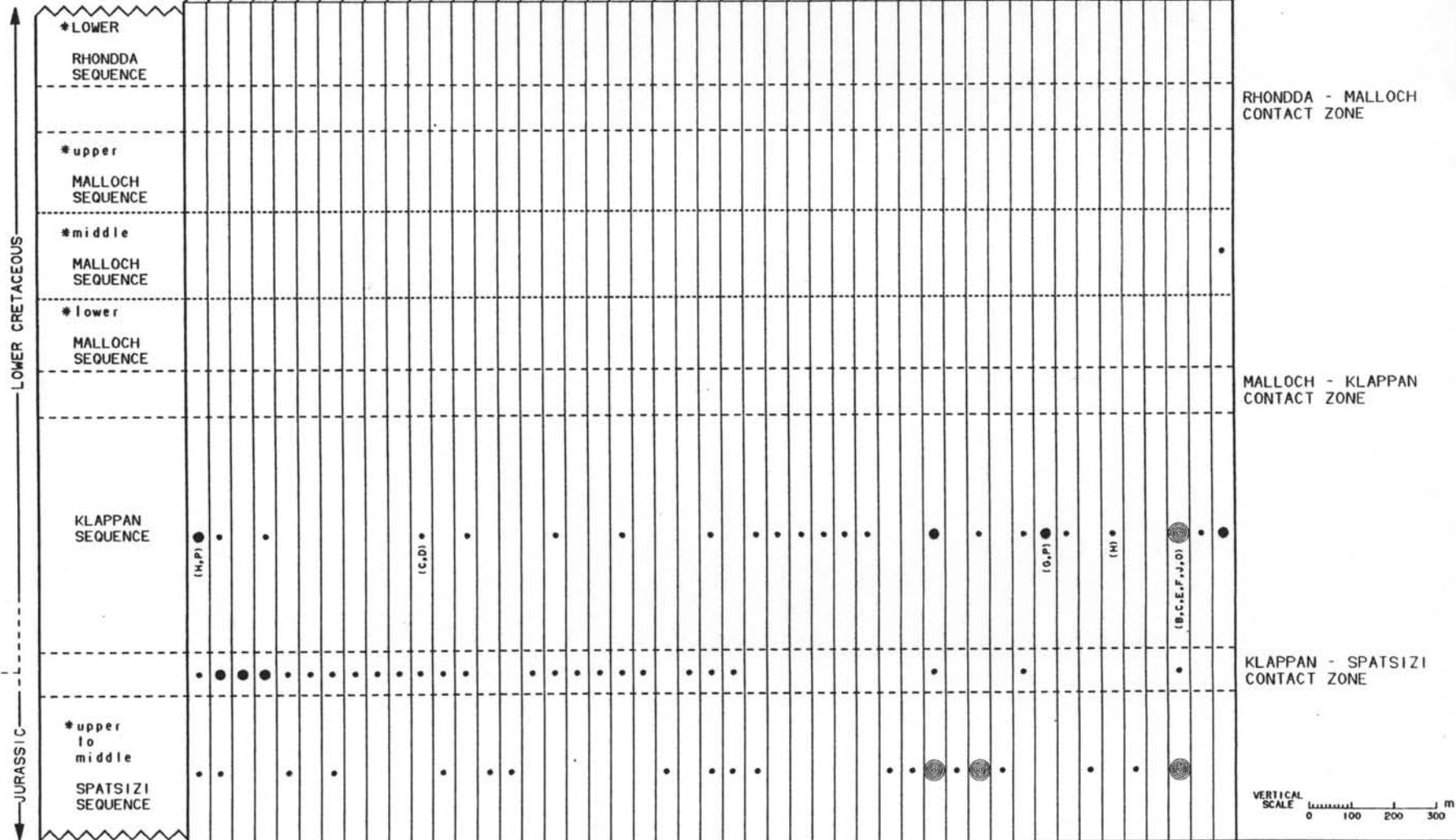
6.3.4.1 Spatsizi Sequence

Marine bivalves, particularly Laevitrigonia, Ostrea, Staffinella and Herzogina, exist with belemnites (Belemnopsis sulcatus), and foraminifera (Globularia) in the predominantly marine Spatsizi Sequence (Table 6.3). No plant fossils are found except at the upper contact zone where conditions are interpreted to have existed which were transitional between marine and terrestrial. Abundant fresh and brackish water and marine bivalves, trace fossils (Helminthopsis, Diplocraterion, and Scolithos), turritellid snails, minor plant macrofossils and belemnites are found in close proximity in this zone.

STRATIGRAPHIC POSITION OF FOSSIL FAUNA, MT. KLAPPAN

- 1 - 2 DOCUMENTED OCCURRENCES
- 3 - 4 DOCUMENTED OCCURRENCES
- ⊙ 5 - 10 DOCUMENTED OCCURRENCES

ACESTA *HEROSIINA* *STAFFINELLA* *OSTREA* *ASTARPE* *SP.A* *LINDSIS* *MERIDONS* *GLOBULARIA* (FORM) *ZYRORPUS* *TURRITELLID* SNAIL (GASTROPOD) *VENETICYPRIUM* *ISOCYPRIUM* *BUCHIA* *BUCHIA FISCHERIANI* *BUCHIA CONCENTRICA* VAR. *ERRINGTONI* *EGGALISTA* *EPILUSITUM* *PARITAMPEDIA* (?) *LAEVIVENTRILUM* *INDICULUS* *LITOGYRATID* *ORFOTOM* *PLEUROMYA* SP. *PLEUROMYA* SP. *GYRINEX* (?) *DOBULA* *PLAGIOTOM* *MONILID* *PIERIA* *INACTIN* *QUINTEDEIMA* AFF. *O. FERRENSIS* *PSUDOSOLUS* *BELENOSIS* *WYENE* *LAEVITRIGONIA* *TRITRIGONIA* *ENIGMULUM* *FERRANZONDA* *ALPHEA* *DENTALUM* *SOMPECTER* *HYPOTOM* *CANTONECTES* *KELIMINGOSIS* (TRACE FOSSIL) *DIPLOPATERION* (TRACE FOSSIL) *SKOLLING* (TRACE FOSSIL)



(A,B) SEAMS NEAREST FAUNA

* SEQUENCE SUBDIVISIONS ARE GENERAL AND NOT FORMALLY DEFINED.

FILE NAME ZFAGH205.057385.005002.CHT

TABLE 6.3

The conglomerate near the top of the sequence was formed in environments not conducive to preservation therefore this portion of the strata is relatively barren.

A complete listing of fossils, their geographic locations and stratigraphic position may be found in Appendix D.

6.3.4.2 Klappan Sequence

All but three of the species found on the property are represented in the Klappan Sequence but in lesser numbers than in the lower Malloch Sequence (Table 6.4). Below seams E and F the diversity and total population of plant fossils decreases and increases for bivalves and belemnites. Marine forams (Globularia) and brackish water bivalves (Modiolus and Ostrea) are also present. This fossil distribution, together with such sedimentary structures as wave ripples in clean, thick bedded sandstones, suggests a partly coastal marine influence near the base of the Klappan Sequence.

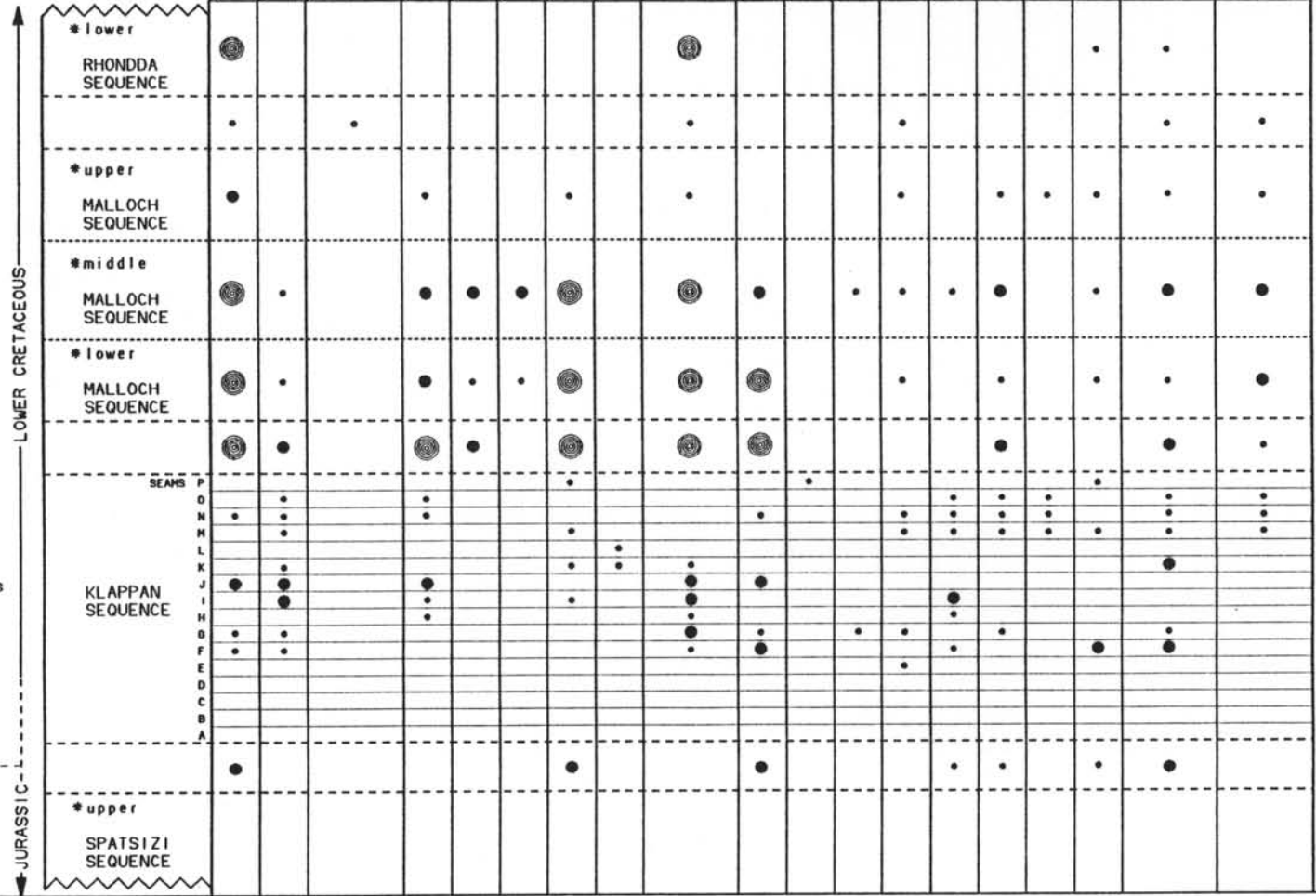
The coal-bearing strata above seams E and F appear to have been deposited in and adjacent to swamps in a fluvio-deltaic environment. Root mottling and burrowing (ie Helminthopsis) indicate non transported, indigenous vegetation and shallow water with minimal wave or current influence such as may be

STRATIGRAPHIC POSITION OF PLANT MACROFOSSILS, MT. KLAPPAN

- 1 - 2 DOCUMENTED OCCURRENCES
- 3 - 5 DOCUMENTED OCCURRENCES
- ⊙ 5 - 15 DOCUMENTED OCCURRENCES

PHYLUM PTERIDOPHYTA				PHYLUM SPERMATOPHYTA						
CLASS FILICINEAE				CLASS GYMNOSPERMAE						
ORDER FILICALES	ORDER EQUISETALES	ORDER GINKGOALES		ORDER ?	ORDER BENNETTITALES & CYCADALES			ORDER CONIFERALES	ORDER ?	

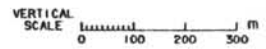
<i>CLADOPHEBIS VIRGINIENSIS</i>	<i>SPIENOPTERIS BRULEIENSIS</i>	<i>EQUISETITES LYELLI</i>	<i>BAIERA FURCATA</i>	<i>BAIERA BRACILLIS</i>	<i>GINKGO LEPIDA</i>	<i>GINKGO NAIN</i>	<i>GINKGO PLURIFRUITITA</i>	<i>CEPANOMSTIA RIGIDA</i>	<i>PIEROPHYLLUM RECTANGULARE</i>	<i>PIEROPHYLLUM PLICATUM</i>	<i>NILSSONIA BRODIGNIARTI</i>	<i>NILSSONIA CANADENSIS</i>	<i>NILSSONIA TENUIFOLIA</i>	<i>NILSSONIA SCHUMBERGENSIS</i>	<i>CTENIS BOREALIS</i>	<i>NILSSONIA HINGOALLENSIS</i>	<i>PITTOPHYLLUM MORENSIS/10/11</i>	<i>PODZANITES LANCEOLATUS</i>
---------------------------------	---------------------------------	---------------------------	-----------------------	-------------------------	----------------------	--------------------	-----------------------------	---------------------------	----------------------------------	------------------------------	-------------------------------	-----------------------------	-----------------------------	---------------------------------	------------------------	--------------------------------	------------------------------------	-------------------------------



RHONDDA - MALLOCH CONTACT ZONE

MALLOCH - KLAPPAN CONTACT ZONE

KLAPPAN - SPATSIZI CONTACT ZONE



FILE NAME ZFA01205.0573851005001.CHT

* SEQUENCE SUBDIVISIONS ARE GENERAL AND NOT FORMALLY DEFINED.

TABLE 6.4

found in a poorly drained swamp. The plant population is of a high diversity, has relatively large populations and is well preserved in the anaerobic and reducing conditions of standing water.

Also evident, though to a much lesser extent, are environments indicative of well drained, channelled swamps in which sediments are coarser, thicker bedded and cross-bedded. These discontinuous swamps have a smaller and less diverse plant population which is more fragmentary in nature. Preservation is also poor due to the loss of organic material during oxidizing conditions.

6.3.4.3 Malloch Sequence

The Malloch Sequence typically has a high diversity of plants but they are fragmentary in nature and few in numbers. The diversity and numbers are higher in the lower Malloch and they peak at the Malloch-Klappan contact zone. The most dominant species are Cladophlebis virginiensis, Baiera furcata, Ginkgo nana, Czekanowskia rigida and Pterophyllum rectangulare. No bivalves or other fauna are documented. Fossil and sedimentological evidence (Section 6.3) suggest that the sequence was the result of distal portions of alluvial fans prograding over a delta plain. Conglomerate - dominated depositional environments such as alluvial fans result in reworking and non-preservation of plants near the top of the

Malloch Sequence. The lower energy delta plain environment interpreted for sediments nearer the Malloch-Klappan contact zone is more conducive to a higher plant diversity and better preservation. Marine fauna are absent in the Malloch Sequence.

6.3.4.4 Rhondda Sequence

The Rhondda Sequence contains minor quantities of Cladophlebis virginiensis, Czekanowskia rigida, Nilssonia nigracollensis and the conifer Pityophyllum nordenskioldii. The low diversity and numbers and the fragmentary nature of the plants is probably due to reworking and non-preservation in high energy depositional environments such as alluvial fans.

The Malloch-Rhondda contact zone contains an additional four species. The broad-leafed conifer, Podozamites lanceolatus, the conifer Pityophyllum nordenskioldii and Nilssonia canadensis and Equisetites lyelli are all present in minor quantities.

Only Equisetites lyelli is unique to this zone but this may be due to its low population compared to other flora. The increase in plant species as a whole in this zone is reflected in the change of depositional environment interpreted for sediments near the base of the Rhondda where there is

an increase in siltstone, channelling and thin carbonaceous bands. The plants are less fragmentary in nature and are found dominantly in the nodular, orange-weathered, laminated siltstone, mudstone and in the roof and floor of thin coal and carbonaceous mudstone bands.

6.3.5 Age Implications of Fossil Distribution

Nineteen species of plant macrofossils, documented predominantly in the Klappan and Malloch sequences indicate that the Cretaceous boundary should be placed within, or in close proximity to the Klappan-Spatsizi contact zone (Figure 6.2). This 100 to 300 metres section is loosely defined as a zone with stratigraphic characteristics and fossil contents which are transitional in nature between the marine conditions of the Spatsizi Sequence and the predominantly fluvio-deltaic conditions of the Klappan Sequence. Marine bivalves, gastropods and belemnites are found in close proximity to terrestrial plant fossils in this zone.

Five of the nineteen plant macrofossils contained within the stratigraphic package are not definitively Lower Cretaceous in age and may be confused with Jurassic counterparts when examined macroscopically. These include the gymnosperms Czekanowskia rigida, Baiera furcata, Nilssonia nigracollensis, Podozamites lanceolatus and Ctenis borealis. Single species collections are rare, however, and floristic comparisons with other western Canadian formations with similar collections (Table 6.5) suggest that the Klappan

AGES OF MT. KLAPPAN PLANT MACROFOSSILS IN OTHER WESTERN CANADIAN FORMATIONS

- 1 - 2 DOCUMENTED OCCURRENCES
 - 3 - 4 DOCUMENTED OCCURRENCES
 - ⊙ 5 OR MORE DOCUMENTED OCCURRENCES
- (BASED ON DATA FROM BELL, 1956)

KLAPPAN - MALLOCH - RHONDDA SEQUENCE PLANT MACROFOSSILS

CLADOPHEBIS VIRGINIENSIS
STREPTOPTERIS BRULENSIS
EQUISETITES LYELLI
BAIERA FURCATA
BAIERA GRACILIS
GINGKO LEPIDA
GINGKO MINN.
GINGKO PLURIPARTITA
CERAMONOSTA RIGIDA
PTEROPHYLLUM RECTANGULARE
PTEROPHYLLUM Plicatum
NILSSONIA BROGNIARTI
NILSSONIA CANADENSIS
NILSSONIA TENUIDAULIS
CTENIS BERALIS
NILSSONIA NIGROCOLLENSIS
PITYOPHYLLUM NORZEBYKLOJII
PODDANITES LANCEOLATUS

* PARTIAL SPECIES LISTS ARE GIVEN FOR ALL FORMATIONS. ONLY THOSE SPECIES COMMON TO BOTH MT. KLAPPAN AND OTHER FORMATIONS ARE INCLUDED.

		FORMATIONS	CLADOPHEBIS VIRGINIENSIS	STREPTOPTERIS BRULENSIS	EQUISETITES LYELLI	BAIERA FURCATA	BAIERA GRACILIS	GINGKO LEPIDA	GINGKO MINN.	GINGKO PLURIPARTITA	CERAMONOSTA RIGIDA	PTEROPHYLLUM RECTANGULARE	PTEROPHYLLUM Plicatum	NILSSONIA BROGNIARTI	NILSSONIA CANADENSIS	NILSSONIA TENUIDAULIS	CTENIS BERALIS	NILSSONIA NIGROCOLLENSIS	PITYOPHYLLUM NORZEBYKLOJII	PODDANITES LANCEOLATUS					
LOWER CRETACEOUS	ALBIAN	BLAIRHORE FM (UPPER FLORA)	●	•																?	•				
		PASAYTEN OP	⊙																				?	•	
		KINOSVALE OP											•												
		CROWSNEST FM																							
		COMOTION FM																							
	APTIAN	BLAIRHORE OP (LOWER FLORA)	⊙	•	•			•	⊙						•							•	•		
		LUSCAR FM	⊙	•	•				⊙		⊙	•		•								⊙	⊙		
		BULLHEAD OP (DETHING FM)	•			•	•		•		⊙	•		•								•	⊙		
		USLIKA FM	•																						
		HAZELTON OP (SKEENA BEDS)				•			•	•		•		•									•		
		JACKASS MOUNTAIN OP	•									•													
		SPENCE BRIDOE OP																							
	NEOCOMIAN - BARREMIAN	KOOTENAY FM	⊙	⊙	•	•	•	⊙	•	⊙					•	⊙	⊙	•	⊙	⊙		⊙	⊙		
		NIKANASSIN FM			•	?			•	•	•											•	•		
		HAZELTON OP (HAZELTON AREA)	⊙	⊙	•				⊙		⊙			•								⊙	•		
HAZELTON OP (GROUNDHOG AREA)		⊙						•	•						•	•					⊙	•			
TANTALUS FM		•												•	•						•				

TABLES INDICATES A LOWER CRETACEOUS AGE FOR COAL-BEARING STRATA OF MT. KLAPPAN BY FLORISTIC COMPARISONS WITH OTHER WESTERN CANADIAN LOWER CRETACEOUS FORMATIONS WITH SIMILAR COLLECTIONS.

TABLE 6.5

Sequence is predominantly Lower Cretaceous in age. The Kootenay and Blairmore Formations of Lower Cretaceous (Necomian/Barremian-Albian) age contain 14 of the 19 species from Mount Klappan.

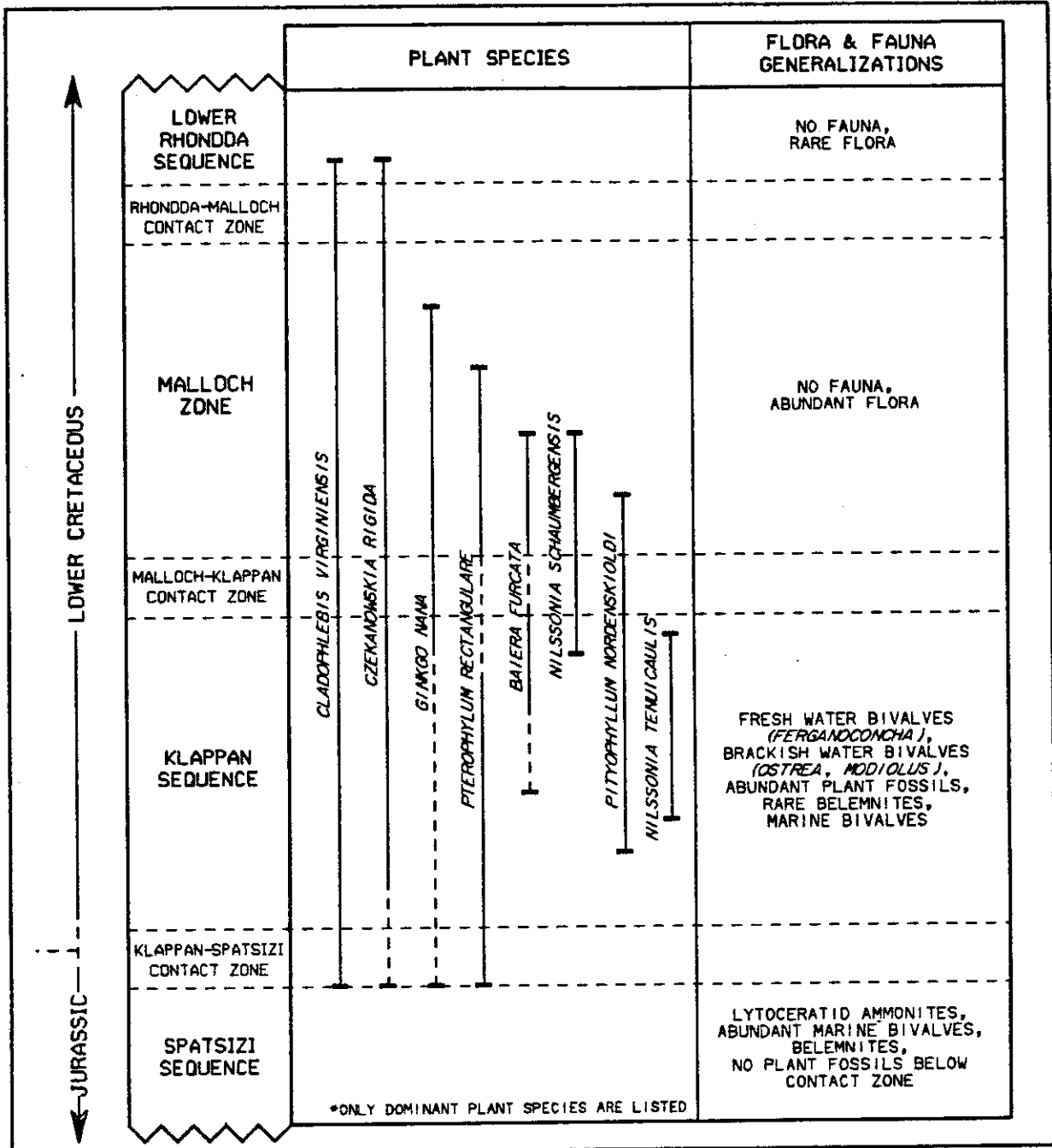
6.3.6 Index Fossil Limitations

Fossil collections from the 1984 and 1985 field seasons have demonstrated a few key trends which, in combination with lithological patterns, aid in the delineation of stratigraphic boundaries. These fossil trends are documented in Table 6.6.

In general, the Spatsizi Sequence is the only Mount Klappan strata to be characterized by the presence of Lytoceratid ammonites, a relative abundance of belemnites and marine bivalves and a lack of plant fossils. The Klappan Sequence, including the contact zone, contains the only fresh water bivalves (Ferganoconcha) and brackish water bivalves such as Ostrea and Modiolus. The Malloch Sequence contains no bivalves or other fauna, to date, but has a high diversity and population of plant fossils particularly in the middle and lower portions. The Rhondda Sequence is distinctive in its general lack of flora and fauna.

Many of the species, documented at Mount Klappan in specific horizons, span the entire Lower Cretaceous period in other western Canadian coal-bearing formations. This suggests that the presence or absence of fossils within the strata is controlled largely by depositional environments rather than strictly by age. For this reason, single species documented

TABLE 6.6
MOUNT KLAPPAN COAL PROPERTY
GENERAL TRENDS OF FOSSIL DISTRIBUTION



GULF CANADA RESOURCES INC.
18/12/85



at a limited number of locations should not be considered as indicative of a specific age given the present control.

6.4 Lost-Fox Area Geology

6.4.1 Introduction

The Lost-Fox Area is underlain primarily by sediments of the coal-bearing Klappan Sequence. The overlying non-marine Malloch Sequence becomes predominant in the southern region of the area, south of Fox Creek toward Mount Klappan and Knooph Hill, as the stratigraphic package plunges regionally within the Lost-Fox Area toward the southwest.

The strata have been subjected to two successive non-coaxial phases of deformation. The first phase (F_1) resulted in major folds which trend in a northwest-southeast direction and generally plunge shallowly to the northwest or southeast. The second phase (F_2) resulted in discontinuous asymmetric folds which trend roughly east-west. The F_2 event has resulted in plunge reversals on the F_1 structures and refolded them into a series of disharmonic, tight and occasionally overturned folds in some areas of the Lost-Fox Area.

Exploration to date has determined that the Klappan Sequence of the Lost-Fox Area contains at least 25 coal horizons, 20 of which contain potentially mineable coal seams with an aggregate average true thickness of about 48 metres. The coal seams average about 2.4 metres in thickness and range up to 6.75 metres. Drilling and trenching operations

have primarily concentrated in the vicinity of and south of Lost Ridge as well as the hogback area to the north of the Ridge. It is presently interpreted that these 20 coal seams occur within approximately 450 metres of section in the Klappan Sequence strata. The entire thickness of the Klappan Sequence has not been intersected in exploration to date on the Lost-Fox Area. The sequence is interpreted to attain thicknesses of up to 900 metres in the Mount Klappan property and approximately 700 metres in the Lost-Fox Area; hence, there is potential for the existence of further coal seams.

Detailed geological maps and cross-sections pertaining to the Lost-Fox Area are located in Appendix II. All outcrop measured section data is located in Appendix I, as is the 1:50 000 Regional Geology Map of the Mount Klappan property.

6.4.2 Klappan Sequence

The Klappan Sequence predominates in the Lost-Fox Area and extends throughout Lost Ridge to the base of Mount Klappan in the south and into the valley separating Knooph Hill from Lost Ridge in the east. Based on field observation and drill core analyses sediments of this sequence range from shallow marine to non-marine within a coastal plain environment.

To date, exploration operations have not delineated the total thickness of the sequence. Based on drill hole and trench information there are at least 540 metres of

coal-bearing Klappan Sequence strata within the Lost-Fox Area. Surrounding areas have reported thicknesses of up to 900 metres, however based on detailed geologic interpretation, in the Lost-Fox Area the Klappan Sequence may attain a thickness of about 700 metres.

The essential lithologic composition of the Klappan Sequence is a cyclic alternation between coal and interlaminated siltstone and mudstone, although sandstone and minor conglomerate are more abundant in the middle of the sequence. Sediments accumulated through the periodic establishment of coal swamps along a marine to transitional marine coastline. Numerous migrating fluvial systems transecting the shoreline provided a constant sediment supply and caused the repeated lateral relocation of coal swamp depositional centres.

The basic cycle of deposition produced coal seams or carbonaceous zones stratigraphically separated by 23 to 33 metres of strata. Superimposed on this cycle was a larger oscillation which resulted in thicker, better developed coaly zones in the middle of the unit, seam Gu to seam I, than those higher or lower. There was also an increase in coarse sediments in this middle section. Associated with this is the appearance of ripple marks and planar and trough cross-bedding, suggesting more fluvial conditions.

The contact between the Klappan Sequence and the underlying, marine, Spatsizi Sequence is transitional. Towards the base of the Klappan Sequence, thinly bedded

siltstone and mudstone units increase in abundance, occasional fauna types are observed and coal thicknesses decrease.

6.4.3 Malloch Sequence

Mount Klappan, Knooph Hill, Grizzley Ridge and Cincie's Ridge have been interpreted as Malloch Sequence sediments. Up to approximately 250 metres of the lower portion of the the Malloch Sequence are present in the southern region of the Lost-Fox Area. Very little time was given to investigating this area further during the 1985 field season. Thicknesses of approximately 700 metres for this sequence are reported in other areas of the Mount Klappan property.

The Malloch Sequence contains repetitive sequences of fine to coarse-grained sandstone, interbedded argillaceous siltstone, mudstone, thick bedded conglomerate and thin coal seams which suggest a non-marine environment. Sandstones and interbedded siltstone beds are the dominant lithologies in the lower Malloch Sequence outcroppings in the Lost-Fox Area. Cross-bedded conglomerate beds are laterally discontinuous indicating fluvial reworking similar to that of the Klappan Sequence.

The contact between the Malloch and Klappan sequences has not been observed in the field but is interpreted as gradational by the gradual change in lithologies and coal seam character from one sequence to the next.

6.4.4 Coal Seam Development

6.4.4.1 Klappan Sequence

Four consecutive years of drilling programs have determined the presence of 25 coal and carbonaceous horizons based on present correlations (Tables 6.7, 6.8). These horizons occur within approximately 540 metres of section and contain coal seams with true thicknesses of up to 6.75 metres, although drill hole DDH85023 has drilled structurally thickened seams up to 16.72 metres. The various coal horizons have been labelled from B to P. Where seam G has been recorded it is because its designation as G upper or G lower is inconclusive and requires further study. On Lost Ridge a thin isolated coaly horizon has been labelled Q but has not been drilled or trenched.

The 20 drilled, potentially mineable coal seams (seams 0 to C) have an aggregate average true thickness of about 48 metres within approximately 450 metres of Klappan Sequence strata (Table 6.7). The average true thickness of these coal intersections is 2.4 metres.

Due to the core relogging program (Section 5.10), correlations have altered minimally from those presented in the 1984 report. An updated version of those seams as well as those from the two 1985 programs are listed on Table 6.8. All resource calculations are based on the 1985 thicknesses and correlations.

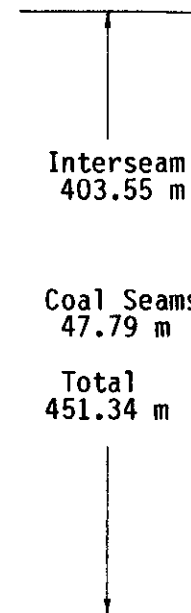
Table 6.7

LOST-FOX AREA: COAL SEAM AND CARBONACEOUS ZONE SUMMARY

Seam	Number Valid Data Points (Diamond Drilling)	Average True Thickness (m) (Coal)	Average True Thickness (m) (Coal + Rock)	Average True Thickness (m) Potentially Mineable Intersections	Representative True Interseam Thickness** (m)
P	1	0.22	0.22	--	17.73 m
O/P	1	0.31	0.31	--	36.73 m
O	4	1.37	2.03	2.37	32.80 m
N (upper)	1	0.17	0.17	--	3.20 m
N	4	1.35	1.79	1.85	15.20 m
M/N	3	0.43	2.10	.86	11.70 m
Mu	1	1.81	1.85	1.85	2.50 m
M	7	4.66	6.66	5.19	28.40 m
L/M	1	0.32	0.40	--	11.80 m
L	8	1.62	3.02	2.53	28.75 m
K/L	3	1.41	1.79	1.79	21.25 m
K	12	2.05	2.84	3.01	23.00 m
J	16	0.28	0.88	3.56	36.75 m
I	27	4.06	4.63	4.63	24.90 m
H/I	6	0.21	3.18	.61	14.00 m
H	20	3.18	3.95	4.13	20.10 m
PH	16	0.46	2.98	3.13	33.80 m
G upper	7	0.72	2.46 Avg: 2.21	2.62 Avg: 2.42	12.20 m
*G	9	0.87	1.96	2.22	
G lower	7	0.61	1.17	.99	7.10 m
F/G	4	0.22	0.34	.51	14.75 m
F	14	2.26	2.99	2.87	18.00 m
E	12	1.24	1.31	1.63	24.25 m
D	4	1.94	2.37	3.01	19.10 m
C	4	0.43	0.77	.85	27.40 m
B	1	0.27	0.29	--	
Total	193	32.47 m	50.25 m	47.79 m	485.41 m 50.25 m

Total Thickness of
Coal-Bearing Sequence

535.66 m



*Seam designation as G upper or G lower is inconclusive and requires further study, however averaged with Gu for presentation purposes.

**Obtained from a composite section of typical true interseam and seam thicknesses.

Table 6.8

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval		True Thickness		Comments
		(m)		Coal (m)	Coal + Rock (m)	
DDH82005	I (ovt)	54.02	- 60.30	4.26	4.98	
	J (ovt)	108.17	- 108.31	0.14	0.14	
	K (ovt)	148.09	- 154.34	3.99	5.16	
	L (ovt)	186.89	- 193.81	2.75	5.75	
	M (ovt)	236.14	- 238.92	1.43	2.24	
DDH83001	I	26.90	- 32.68	4.96	5.51	
	H	74.73	- 79.38	3.83	4.54	
	G upper	133.42	- 137.43	3.00	3.93	Resource thickness. Additional coaly zone containing 64.03% ash from 138.22 m to 139.19 m.
	G lower	142.45	- 144.75	1.24	2.25	
	F	180.62	- 185.52	3.88	4.79	
	E	209.60	- 210.94	1.32	1.32	
DDH84005	PH	10.67	- 12.24	0.00	1.55	Drill hole intensely folded.
	G upper	34.30	- 48.70	0.00	6.49	
	G lower	59.00	- 61.10	0.41	1.62	
	F	83.40	- 84.78	0.78	0.78	
	E	111.40	- 114.42	0.00	2.95	
DDH84006	H (ovt)	16.04	- 22.21	4.69	5.80	Limited lateral extent.
	H/I (ovt)	49.43	- 50.17	0.61	0.61	
	I (ovt)	109.99	- 116.94	4.71	5.04	
	J (ovt)	154.04	- 159.35	3.20	3.56	
	K (ovt)	257.54	- 260.95	2.27	2.88	
DDH84007	J	20.53	- 23.09	0.00	2.45	Carbonaceous zone.
	I	56.87	- 62.32	5.11	5.43	
	H	103.00	- 107.18	3.27	3.98	
	PH	124.77	- 127.86	2.45	2.98	
	G upper	151.43	- 151.72	0.28	0.28	
	G lower	164.64	- 165.53	0.72	0.89	
	F	227.26	- 228.36	0.97	1.07	
	E	251.62	- 252.70	1.00	1.00	
	E (ovt)	272.00	- 282.45	3.75	3.79	
DDD84008	L	23.20	- 29.26	0.94	4.49	Intensely folded. Not used for resources.
	K	61.40	- 65.37	3.33	3.93	

Table 6.8 cont'd

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval		True Thickness		Comments
		(m)		Coal (m)	Coal + Rock (m)	
DDH85001	J	93.24	- 93.39	0.14	0.14	Intensely folded. Not used for resources.
	I	133.60	- 137.71	3.40	3.86	
	H/I	169.15	- 169.49	0.33	0.33	
	H	180.08	- 189.53	5.90	6.41	
	H	218.82	- 234.37	3.67	3.84	
	PH	271.11	- 274.55	1.88	3.28	
	G	290.90	- 291.21	0.29	0.29	
	J	22.10	- 22.68	0.36	0.36	
	I	119.13	- 123.51	3.38	4.38	
	H/I	141.01	- 141.07	0.05	0.05	
DDH85002	H	158.65	- 160.98	1.74	2.15	Twinned hole with DDH85004. (Non-Valid Data Point).
	PH	175.78	- 176.00	0.22	0.22	
	G	214.70	- 215.64	0.85	0.94	
	I	59.45	- 62.68	3.00	3.23	
	H	101.62	- 102.97	1.09	1.35	
DDH85003	M (ovt)	35.71	- 42.63	3.91	5.30	
	M/N (ovt)	91.30	- 92.00	0.56	0.56	
	N (ovt)	100.20	- 102.39	1.17	1.72	
	N (upright)	170.59	- 172.29	1.08	1.44	
DDH85004	I	59.02	- 62.72	3.47	3.70	
	H	101.65	- 105.64	3.20	3.96	
	PH	125.97	- 126.20	0.23	0.23	
	G	160.32	- 165.35	2.43	4.92	
	F	204.19	- 206.57	1.73	2.35	
	E	223.68	- 226.75	2.04	2.23	
	E (rep)	237.89	- 239.64	0.44	0.50	
DDH85005	O (ovt)	26.90	- 30.13	0.64	0.67	Intensely folded. Not used for resources.
	O	51.60	- 53.25	1.11	1.33	
	N (upper)	98.55	- 99.65	0.17	0.17	
	N	106.13	- 111.87	2.43	3.94	

Table 6.8 cont'd

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval		True Thickness		Comments
		(m)		Coal (m)	Coal + Rock (m)	
DDH85001	J	93.24	- 93.39	0.14	0.14	Intensely folded. Not used for resources.
	I	133.60	- 137.71	3.40	3.86	
	H/I	169.15	- 169.49	0.33	0.33	
	H	180.08	- 189.53	5.90	6.41	
	H	218.82	- 234.37	3.67	3.84	
	PH	271.11	- 274.55	1.88	3.28	
	G	290.90	- 291.21	0.29	0.29	
	J	22.10	- 22.68	0.36	0.36	
	I	119.13	- 123.51	3.38	4.38	
	H/I	141.01	- 141.07	0.05	0.05	
DDH85002	H	158.65	- 160.98	1.74	2.15	Twinned hole with DDH85004. (Non-Valid Data Point).
	PH	175.78	- 176.00	0.22	0.22	
	G	214.70	- 215.64	0.85	0.94	
	I	59.45	- 62.68	3.00	3.23	
	H	101.62	- 102.97	1.09	1.35	
DDH85003	M (ovt)	35.71	- 42.63	3.91	5.30	
	M/N (ovt)	91.30	- 92.00	0.56	0.56	
	N (ovt)	100.20	- 102.39	1.17	1.72	
	N (upright)	170.59	- 172.29	1.08	1.44	
DDH85004	I	59.02	- 62.72	3.47	3.70	
	H	101.65	- 105.64	3.20	3.96	
	PH	125.97	- 126.20	0.23	0.23	
	G	160.32	- 165.35	2.43	4.92	
	F	204.19	- 206.57	1.73	2.35	
	E	223.68	- 226.75	2.04	2.23	
	E (rep)	237.89	- 239.64	0.44	0.50	
DDH85005	O (ovt)	26.90	- 30.13	0.64	0.67	Intensely folded. Not used for resources.
	O	51.60	- 53.25	1.11	1.33	
	N (upper)	98.55	- 99.65	0.17	0.17	
	N	106.13	- 111.87	2.43	3.94	

Table 6.8 cont'd

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval		True Thickness		Comments
		(m)		Coal (m)	Coal + Rock (m)	
	M	210.91	- 214.17	1.89	2.93	
	L/M	243.46	- 243.86	0.32	0.40	
	L	255.98	- 256.63	0.41	0.61	
	K/L	310.83	- 311.56	0.62	0.66	Limited lateral extent.
	K	316.12	- 319.48	2.49	3.10	Resource thickness. Additional coaly zone from 320.99 m to 321.62 m with no ash analysis.
DDH85006	H	23.32	- 26.09	2.13	2.76	
	G	81.93	- 85.47	2.15	3.49	Resource thickness. Additional coal zone containing 67.74% ash from 85.47 to 88.08 m.
	F	153.47	- 156.65	1.94	3.10	
	E	178.13	- 179.04	0.62	0.91	
DDH85007	I	95.50	- 102.30	3.63	4.81	Twinned hole with DDH85009. (Non-Valid Data Point).
DDH85008	G upper	19.00	- 19.36	0.07	0.36	
	G lower	48.00	- 49.16	0.57	0.67	
	F	80.87	- 81.71	0.63	0.66	
DDH85009	H/I (ovt)	24.57	- 26.24	0.00	1.22	Coalified plant fragments.
	I (ovt)	102.85	- 111.00	4.28	4.90	
	J (ovt)	166.20	- 166.23	0.02	0.02	
	K (ovt)	204.40	- 209.51	2.70	3.27	
	L (ovt)	241.14	- 247.93	2.73	4.46	
	M (upright)	322.62	- 328.06	2.09	2.81	Intensely Folded; Not used for resources.
DDH85010	P	73.40	- 73.62	0.22	0.22	
	O/P	91.66	- 92.01	0.31	0.31	
	O	130.04	- 134.76	2.60	4.60	Resource thickness. Additional coaly zone containing 63.61% ash from 134.76 to 135.90 m.
	N	159.22	- 161.13	1.19	1.81	
	M/N	182.93	- 188.08	0.00	4.60	Minor coal rip ups and stringers.
	M	222.56	- 228.22	2.82	3.96	
DDH85011	L	16.97	- 18.43	0.00	1.32	Occasional coaly lenses.
	K	36.49	- 40.55	2.20	3.47	Resource thickness. Additional coaly zone from 42.02 to 42.74 m, with no ash analysis.
	J	70.56	- 70.94	0.00	0.37	Carbonaceous zone.

Table 6.8 cont'd

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval		True Thickness		Comments
		(m)		Coal (m)	Coal + Rock (m)	
DDH85012	I	101.44	- 103.34	1.22	1.75	Minor coal stringers. Becciated coaly claystone.
	H/I	139.23	- 144.84	0.00	5.23	
	H	153.42	- 154.11	0.00	0.65	
	L	23.24	- 24.84	1.37	1.37	Limited lateral extent (?). Resource thickness. Additional coaly zone containing 64.70% ash from 71.73 m to 73.63 m. Carbonaceous zone.
	K/L	50.16	- 51.69	1.15	1.49	
	K	69.89	- 71.73	1.62	1.74	
	J	125.61	- 126.50	0.00	0.79	
	K (repeat)	151.54	- 153.01	0.59	1.22	
	J	176.01	- 176.21	0.00	0.16	
	I	205.78	- 209.20	2.06	3.21	
H/I	242.57	- 255.92	0.26	11.63		
DDH85013	K	22.90	- 23.91	0.68	0.98	Coal stringers.
	J	50.02	- 52.93	0.00	2.84	
	I	91.24	- 97.53	5.33	6.16	
	H	146.55	- 150.96	2.60	4.37	
	PH	176.56	- 176.65	0.09	0.09	
	G upper	185.65	- 185.90	0.22	0.22	
	G lower	211.17	- 211.82	0.56	0.65	
	F/G	235.70	- 236.11	0.18	0.39	
	F/G	242.26	- 242.59	0.17	0.32	
	F	271.23	- 275.51	2.66	4.21	
DDH85014	K	32.60	- 35.40	0.00	2.76	Coal stringers.
	J	63.22	- 64.46	0.00	1.17	Coal stringers.
	I	102.59	- 108.37	5.24	5.46	
	H	155.53	- 157.67	1.05	2.09	
	PH	160.98	- 162.11	0.00	1.12	Carbonaceous zone.
	F	247.19	- 250.10	2.22	2.71	
DDH85015	E (ovt)	32.54	- 34.89	0.85	0.95	
	F (ovt)	78.00	- 82.28	1.92	2.73	

Table 6.8 cont'd

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval (m)	True Thickness		Comments
			Coal (m)	Coal + Rock (m)	
DDH85016	F/G (ovt)	92.37 - 92.57	0.00	0.14	Intensely folded; Not used for resources.
	G	157.52 - 166.01	1.74	3.43	
	G	176.39 - 177.71	1.18	1.30	Coal lenses in carbonaceous mudstone.
	G	185.47 - 185.62	0.15	0.15	
	J	26.54 - 27.49	0.00	0.94	
	I	80.80 - 86.41	5.11	5.55	
	H	127.12 - 134.33	4.57	6.75	
	PH	141.86 - 144.38	0.75	2.07	
	G	182.72 - 183.64	0.79	0.79	
	F	205.20 - 207.59	1.77	2.13	
E	231.45 - 233.78	2.12	2.22		
D	263.00 - 265.51	2.30	2.41	Resource thickness. Additional coaly zone containing 79.54% ash from 261.44 m to 263.00 m.	
DDH85017	C	285.71 - 286.08	0.34	0.34	Resource thickness: 0.58/1.01 m
	B	318.22 - 318.55	0.27	0.29	
	J	64.86 - 65.03	0.16	0.16	Resource thickness. Additional coaly zone containing 68.98% ash from 263.92 m to 265.51 m.
	I	101.36 - 106.87	4.41	5.37	
	H	152.36 - 157.10	3.79	4.67	
	PH	184.56 - 189.06	1.55	4.41	
	G upper	204.72 - 208.53	1.07	3.80	
	G lower	221.21 - 222.23	0.71	0.97	
	F	241.48 - 243.47	1.56	1.93	
	E	261.48 - 263.92	2.27	2.34	
DDH85018	J	22.42 - 22.52	0.00	0.09	Carbonaceous zone.
	I	69.08 - 71.75	2.54	2.61	Carbonaceous mudstone with coal stringers.
	H	109.90 - 113.78	3.24	3.63	
	PH	132.95 - 139.12	0.00	5.59	

Table 6.8 cont'd

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval		True Thickness		Comments	
		(m)		Coal (m)	Coal + Rock (m)		
DDH85019	G upper	158.08	- 165.50	0.00	7.35	Coal ripup clasts in sandstone. Coal ripup clasts in sandstone.	
	G lower	169.90	- 172.18	0.00	2.24		
	F	212.26	- 218.60	4.89	6.02		
	E	238.76	- 239.00	0.22	0.22		
	D	260.40	- 263.07	1.57	1.89		
	C	269.02	- 270.48	0.00	1.03	Coal stringers.	
	PH	10.51	- 12.41	0.00	1.90	Coal stringers.	
	G upper	26.21	- 27.51	0.53	1.29	Not used for resources.	
	G lower	31.26	- 31.78	0.45	0.52		
	F/G	46.16	- 46.68	0.51	0.51	Resource thickness. Additional coaly zone from 63.14 m to 63.67 m, with no ash analysis.	
F	65.65	- 70.20	3.62	4.21			
DDH85020	E	87.36	- 87.78	0.33	0.33	Resource thickness. Coaly zone containing 67.74% ash from 94.32 m to 98.12 m. Resource thickness. Additional coaly zone containing 45.03% ash from 152.19 m to 153.84 m.	
	D	121.53	- 122.29	0.36	0.43		
	C	139.06	- 139.69	0.36	0.51		
	F	25.59	- 28.14	0.73	2.49	Resource thickness. Coaly zone containing 67.74% ash from 94.32 m to 98.12 m. Resource thickness. Additional coaly zone containing 45.03% ash from 152.19 m to 153.84 m.	
	E	53.87	- 55.83	1.91	1.91		
	D	98.12	- 106.40	3.51	4.74		
	C	148.72	- 150.41	1.02	1.19		
	DDH85021	I	32.18	- 33.89	1.30	1.61	Carbonaceous zone. Carbonaceous zone.
		H	40.00	- 45.70	4.70	5.55	
		PH	73.55	- 76.18	0.00	2.57	
G		99.67	- 101.60	0.00	1.82		
F		124.40	- 128.11	3.14	3.43		
E		150.22	- 152.19	1.80	1.81		
DDH85022	I	49.04	- 53.87	4.50	4.69	Coal stringers. Coal stringers.	
	H	90.46	- 94.20	3.09	3.66		
	PH	111.08	- 114.58	0.00	3.48		
	G	158.50	- 162.68	0.00	3.93		

Table 6.8 cont'd

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval		True Thickness		Comments
		(m)		Coal (m)	Coal + Rock (m)	
DDH85023	M (upright)	270.74	- 290.26	11.77	16.72	Intensely folded; Not used for resources.
	M (ovt)	214.32	- 230.86	9.67	14.24	
	M	125.84	- 145.84	7.55	11.91	
	L (ovt)	63.18	- 69.04	3.34	4.57	
	K (ovt)	26.93	- 32.42	3.85	4.47	
DDH85024	I	12.68	- 19.68	4.29	6.45	Carbonaceous mudstone with coal bands.
	H	91.08	- 95.87	4.08	4.62	
	PH	117.31	- 123.60	0.11	6.13	
DDH85025	I	36.40	- 40.82	4.04	4.42	Carbonaceous zone.
	H	75.74	- 79.47	3.25	3.72	
	PH	98.10	- 102.64	0.00	4.47	
DDH85026	I	19.68	- 25.41	4.57	5.68	Carbonaceous zone.
	H	62.60	- 66.03	2.92	3.43	
	PH	77.80	- 83.46	0.00	5.57	
DDH85027	O	44.06	- 45.64	1.14	1.51	Limited lateral extent. Limited lateral extent. Limited lateral extent (?). Carbonaceous zone.
	N	75.26	- 77.68	1.94	2.17	
	M/N	94.32	- 95.63	0.72	1.15	
	M upper	109.24	- 111.30	1.81	1.85	
	M	114.88	- 116.16	1.15	1.20	
	L	127.56	- 129.29	1.42	1.62	
	K/L	147.78	- 151.69	2.47	3.22	
	K	163.80	- 164.91	0.92	1.08	
	J	191.45	- 191.98	0.01	0.39	
	I	216.16	- 221.55	4.67	5.03	
	H	265.98	- 268.29	2.22	2.25	
DDH85028	I	10.80	- 15.68	4.47	4.74	

Table 6.8 cont'd

LOST-FOX AREA: SUMMARY OF DIAMOND DRILL HOLE COAL SEAMS AND CARBONACEOUS ZONES

Diamond Drill Hole	Seam	Drilled Seam Interval (m)	True Thickness		Comments
			Coal (m)	Coal + Rock (m)	
	H	56.96 - 61.18	3.39	4.08	
	PH	69.60 - 73.83	0.00	3.70	Carbonaceous zone.
DDH85029	J	75.00 - 75.53	0.43	0.43	
DDH85030	I	20.48 - 24.69	3.73	3.98	Drilled within trial cargo pit area.
DDH85031	I	8.12 - 12.85	4.08	4.54	Drilled within trial cargo pit area.
DDH85032	I	27.54 - 33.03	4.83	5.47	Drilled within trial cargo pit area.
DDH85033	I	10.96 - 16.62	4.90	5.48	Drilled within trial cargo pit area.
DDH85034	I	30.32 - 35.52	4.83	5.14	Drilled within trial cargo pit area.

The combined results of the extensive drill programs and last year's mechanical trenching program confirm that many of the coal seams in the sequence are laterally continuous for several kilometres. In addition, an extension to resources of relatively flat-lying, near-surface, good quality seams (I and H) was identified during the summer drilling and mapping program; this area, which extends along the southern slope of Lost Ridge towards the headwaters of Fox Creek, should receive further investigation.

Initial studies show that typical log signatures are evident for some seams, notably seams E, F, H and I and can be used as correlative tools. Further work is planned in this area during the upcoming year.

Coal seams are indicated on all detailed maps and cross-sections located in Appendix II.

6.4.4.2 Malloch Sequence

Coals of the Malloch Sequence in the Lost-Fox Area are thinner and separated by greater interval thicknesses than those of the Klappan Sequence. As a result a seam correlation has not yet been established. Based on hand trench data from 1982, 1983 and 1984, the coals range from 0.5 metres to 2.41 metres in thickness with an average thickness of 1.26 metres.

6.4.5 Structure

Strata of the Lost-Fox Area have been subjected to two chronologically distinctive phases of deformation. Folds of the first phase (F_1) generation trend at approximately 135° and plunge shallowly to the northwest or southeast. The Lost Ridge anticline - syncline pair, typical of this fold style, maintains vertical northeast limbs in the vicinity of Fox Creek, which become overturned as much as 50° towards the ridge crest. Wavelengths are up to 800 metres with amplitudes up to 300 metres. Annealed quartz breccia zones and associated bedding plane slippages were observed along some axes.

Parasitic synclines, anticlines and monoclines involving packages of 150 metres occur on both limbs of F_1 folds. This fold style is localized yielding to bedding plane slippage higher and lower in the section. Fold axes may be structurally thickened by tight folding within tectonically incompetent units.

Less competent units have acted as decollement surfaces during the first generation of folding. This has been observed on the eastern end and middle of Lost Ridge where monoclines have become detached along coal horizons, from larger overturned structures.

The second deformational phase (F_2) is related to a north-south left-lateral regional shear couple and may be observed in many of the topographically low areas away from

Lost Ridge. F_1 limbs were refolded into a disharmonic series of tight, asymmetrical folds which appear to be discontinuous across F_1 axes. These F_2 structures trend roughly east-west with a steep to overturned northerly limb and a local plunge of up to 33° . Wavelengths are approximately 750 metres with amplitudes of up to 150 metres.

Fold related cleavages are nearly always of the fracture type. Rare argillaceous beds show crenulation cleavages. F_1 cleavages are usually more densely spaced and more consistent in attitude than F_2 cleavages. The F_2 domain is characterized by the rotation of first cleavage surfaces, refraction of second cleavage surfaces, and variable bedding attitudes. Quartz filled longitudinal, oblique and cross joints were observed in the hinge areas of both F_1 and F_2 anticlinal structures.

Brittle deformation affects the area with two major fracture sets, one of easterly, the other of northerly trend. Both sets are post folding. The easterly trending fracture set appears to be the most systematic, and possibly older. Minor strike slip and dip slip displacements along these high angle fractures are common. Vertical components of displacement may locally reach 50 metres.

Thrust faulting occurs in the southeast corner of the Lost-Fox Area where the Klappan Thrust traces along the west side of Cincies Ridge and Grizzley Ridge before terminating on the northeast side of Knooph Hill. This displacement reaches 100 metres along the thrust.

The structure of the Lost-Fox Area is outlined on the 1:50 000 Regional Geology Map located in Appendix I with this text. In addition, detailed geological maps and cross-sections located in Appendix II illustrate the structural styles of the area.

During the trial cargo excavation additional small scale structural features were observed. Localized examples of structural failure are exemplified by a series of equally spaced (about 25 metres) normal faults trending 160° and dipping 65° west. Displacements are in the order of 1 to 2 metres with the down thrown side being to the west. A series of localized small scale shallow thrust faults show minor displacements of approximately 1 - 2 metres. These are examples of minor features of limited extent recorded in outcrop during the trial cargo and did not adversely affect the mining operations.

7.0 RESOURCES

7.1 Mount Klappan Coal Project

7.1.1 Summary

Significant changes to the resource categorization of Mount Klappan anthracite has resulted from the 1985 exploration program. A total of 52.3 million tonnes of measured resources and 50.7 million tonnes of indicated resources have been delineated in the Lost-Fox Area. Each exploration program has confirmed that more tonnage, previously identified as inferred or speculative, are actual or "measured". The in-situ anthracite resource at Mount Klappan totals over 6 150 million tonnes in seams greater than 0.5 metres thick to a maximum depth of 500 metres. The following table summarizes the resource contributions from the areas of the property as well as the representation by resource category. A 1:50 000 Coal Resource Map (Appendix I) presents the distribution of resources over the Mount Klappan property.

Table 7.1

Area	MOUNT KLAPPAN COAL PROJECT COAL RESOURCES (MT)			
	Measured	Indicated	Inferred	Speculative
Lost-Fox	52.3	50.7	86.1	717.9
Hobbit-Broatch	12.1	24.5	369.1	613.3
Summit			35.8	2 254.0
Nass				1 706.8
Skeena				232.3
Total	64.4	75.2	491.0	5 524.3
Total Coal Resources Potential:				6 154.9

The coal seams are contained within the strata of the Klappan Sequence. There are also coal measures in other strata underlying these coal licences; however, they are not presently considered of economic importance.

The parameters within which the coal resources were classified and the procedures utilized in resource calculations are outlined in Section 7.3. A standardized method was utilized for the 1985 resource calculations over the Mount Klappan property.

7.2 Lost-Fox Area

7.2.1 Summary

Increased drill hole density in the Lost-Fox Area during the 1985 exploration program has resulted in significant increases in the measured and indicated resource categories. As outlined in Table 7.2, 103 million tonnes are within the measured and indicated categories. The in-situ anthracite resource in the Lost-Fox area totals over 900 million tonnes in seams averaging 2.4 metres in true thickness to a maximum depth of 500 metres. Resource data is located in Appendix E.

7.3 Procedures and Parameters

7.3.1 Introduction

In-situ resources are defined as the in-place coal (coal and partings) that are contained in seams occurring within specified limits of thickness and depth from surface.

TABLE 7.2

MOUNT KLAPPAN COAL PROJECT
LOST-FOX AREA
COAL RESOURCE SUMMARY
(in million tonnes)

Seam:	Category			TOTAL
	MEASURED	INDICATED	INFERRED	
P				0.0
O/P				0.0
O	1.12	0.72	1.78	3.62
Nu				0.00
N	0.84	0.94	1.72	3.50
M/N				0.00
Mu	0.24	0.30	0.96	1.50
M	5.03	1.83	8.85	15.71
L/M				0.00
L	1.98	0.79	3.34	6.11
K/L	0.75			0.75
K	4.54	3.91	6.87	15.32
J	0.75		3.31	4.06
I	13.45	11.44	15.75	40.64
H/I	0.03			0.03
H	9.63	14.34	12.98	36.95
Ph	0.89	1.28	2.73	4.90
Bu	1.49	0.70		2.19
G	0.66	1.64	0.69	2.99
GI	1.12	0.99	1.44	3.55
F/G				0.00
F	6.19	5.65	6.23	18.07
E	1.95	2.47	4.39	8.81
D	1.47	3.18	12.79	17.44
C	0.21	0.55	2.31	3.07
B				0.00
TOTALS :	52.34	50.73	86.14	189.21 Million Tonnes

Lost-Fox Area Speculative Resources : 717.88 Million Tonnes

LOST-FOX AREA TOTAL RESOURCE: 907.09 Million Tonnes

Resources are further defined through classification into "measured", "indicated", "inferred", and "speculative" categories based on the existence and relative spacing of coal seam exploration data.

The procedures for the resource calculations include standard methods utilizing geological cross-sections and maps as described in Section 7.3.2.

The parameters for resource categorization generally follow those set out for the Cordillera Region by Energy, Mines and Resources Canada in Report ER79-9: Coal Resources and Reserves of Canada. The parameters utilized for the 1984 Mount Klappan Coal Project are described in Section 7.3.3.

7.3.2 Procedures

Diamond drill holes were used as valid data points for resource calculations except for two twinned holes (DDH85002, DDH8007). This information was uploaded onto a Wicat microcomputer system and used MedSystem¹ mine modelling software to generate polygons of influence base maps for each of the 20 seams in the Lost-Fox Area (Table 7.3).

If individual drilled seam intersections were less than 0.5 metres in true thickness or were comprised of over 50% rock partings then they were not used in resource calculations. Intensely disturbed seam intersections were

¹ MedSystem is a registered trademark of Mintec Inc., Tucson, Arizona.

TABLE 7.3

DRILL HOLE SEAM INTERSECTIONS USED IN 1985 RESOURCE CALCULATIONS
(metres)

Drillhole	B	C	D	E	F	F/G	G1	G	G _u	PH	H	H/I	I	J	K	K/L	L	L/M	M	M _u	M/N	N	N _u	O	O/P	P
DDH82005													4.98		5.16				2.24							
DDH83001				1.32	4.79		2.25		3.93		4.54		5.51													
DDH84005					0.78																					
DDH84006											5.80	0.61	5.04	3.56	2.88											
DDH84007				1.00	1.07		0.89			2.98	3.98		5.43													
DDH84008										3.28	6.41		3.86		3.93											
DDH85001								0.94			2.15		4.38													
DDH85002																										
DDH85003																										
DDH85004				2.23	2.35						3.96		3.70						5.30		0.56	(1.58)				
DDH85005															3.10	0.66	0.61		2.93					(1.00)		
DDH85006				0.91	3.10			3.49			2.76															
DDH85007																										
DDH85008					0.66		0.67																			
DDH85009													4.90		3.27		4.46									
DDH85010																			3.96						4.60	
DDH85011													1.75		3.47							1.81				
DDH85012													3.21		1.74	1.49	1.37									
DDH85013					4.21		0.65				4.37		6.16		0.98											
DDH85014					2.71						2.09		5.46													
DDH85015					0.95			1.30																		
DDH85016			2.41		2.22						6.75		5.55													
DDH85017					2.34						4.67		5.37													
DDH85018			1.89		6.02			0.97			3.63		2.61													
DDH85019	0.51				4.21	0.51	0.52																			
DDH85020	1.19	4.74		1.91																						
DDH85021				1.81	3.43						5.55		1.61													
DDH85022											3.66		4.69													
DDH85023															4.47		4.57		(15.48)							
DDH85024											4.62		6.45													
DDH85025											3.72		4.42													
DDH85026											3.43		5.68													
DDH85027											2.25		5.03		1.08	3.22	1.62		1.20	1.85	1.15	2.17		1.51		
DDH85028											4.08		4.74													
DDH85029																										
DDH85030													3.98													
DDH85031													4.54													
DDH85032													5.47													
DDH85033													5.48													
DDH85034													5.14													
NO. INTERSECTIONS	2	3	9	14	1	6	2	2	2	2	19	1	27	1	10	3	5	0	6	1	2	3	0	3	0	0
TOTAL METRES	1.70	9.04	14.69	40.12	0.51	5.95	4.43	5.23	6.26	78.42	0.61	125.14	3.56	30.08	5.37	12.63		31.11	1.85	1.71	5.56		7.11			
AVG. TRUE THICKNESS	0.85	3.01	1.63	2.87	0.51	0.99	2.22	2.62	3.13	4.13	0.61	4.63	3.56	3.01	1.79	2.53		5.19	1.85	0.86	1.85		2.37			

() average thickness in metres; seam intersected more than once.

also not used.

The boundaries for each polygon were transferred onto applicable cross-sections and seam lengths for each area were measured.

The third dimension required for the coal volume calculation, after the seam thickness and length were determined, was the "influence" or "strike length" of the seam.

This measurement was usually the cross-section spacing, as this should be less than or equal to the required data point spacing for the resource category under consideration (Section 7.3.3). Where polygon boundaries ended near or on cross-section lines, judgements as to how to extend the width of influence had to be made and are documented in the Appendix D calculation sheets.

To calculate coal tonnage, an average specific gravity was used. A review of the Mount Klappan Coal Project coal quality data demonstrated that, in general, specific gravity data provided a straight-average value of 1.68 tonnes per cubic metre. Thus, for the purposes of the 1985 resource calculations, this value of 1.68 tonnes per cubic metre was used.

The following equation summarizes the resource calculation procedure:

Tonnes of Coal =

$$\begin{array}{cccc} \text{Seam Thickness} & \times & \text{Seam Length} & \times & \text{Influence} & \times & \text{Specific Gravity} \\ (\text{m}) & & (\text{m}) & & (\text{m}) & & (\text{t/m}^3) \end{array}$$

Speculative resources were calculated using a slightly different procedure. The area indicated on the 1:50 000 Regional Geology Map (Appendix I) to be Klappan Sequence within the Lost-Fox Area but outside the 1:2500 map area, was planimeted. The 9.58 metre seam thickness applied to this area was 25% of the average total aggregate coal thickness for the Lost-Fox (50.25 metres) and Hobbit-Broatch (26.40 metres) areas, as this figure appeared to be a reasonable estimate of the proportionate coverage of coal-bearing section within the area. The specific gravity of 1.68 tonnes per cubic metre was used for this category also. The following equation summarizes the Speculative Resource calculation:

Speculative Resource Tonnes of Coal =

$$\text{Area (m}^2\text{)} \times .25 \times \text{Seam Thk (m)} \times \text{Specific Gravity (t/m}^3\text{)}$$

Within the 1:2500 map area on Lost-Fox, the speculative resources were calculated by measuring the lengths of the seams on the cross-sections, beyond the inferred resource areas and applying an average seam thickness to each. The standard specific gravity of 1.68 t/m³ and a width of influence for each cross-section was used to arrive at a total tonnage figure for speculative resources within the 1:2500 map area.

The sum of speculative resources from within the 1:2500 map area and from the outer areas of Lost-Fox comprises the total speculative resource for the Lost-Fox Area.

7.3.3 Parameters

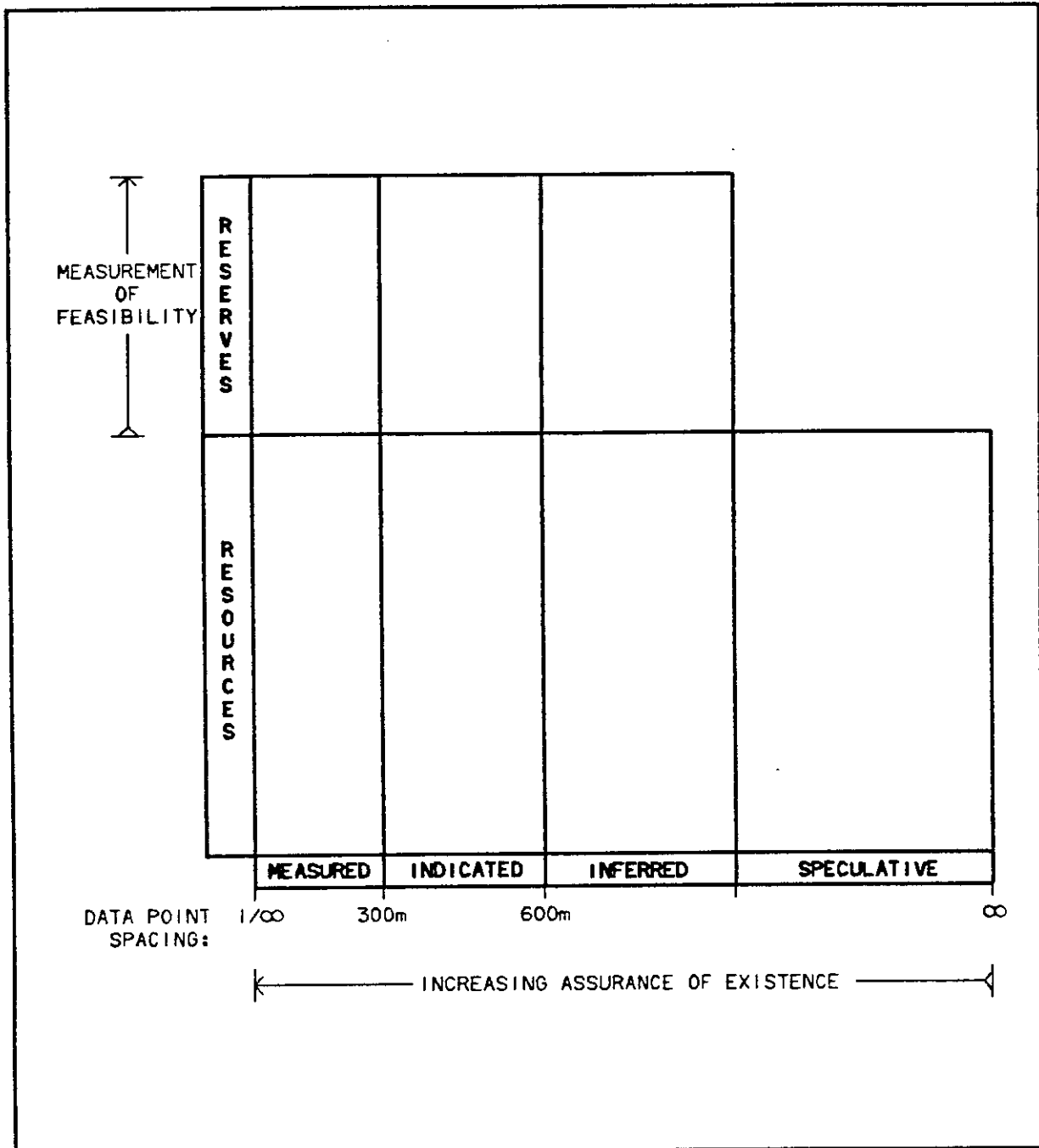
The minimum seam thickness used for the 1985 Mount Klappan Coal Project was 0.5 metres where the dip of the seam was less than or equal to 30° and 1 metre where the dip was in excess of 30°. Seams were included to a maximum depth of 500 metres from surface. A list of the seam thicknesses applied to the Lost-Fox resource calculations is shown in Table 7.3.

The following resource category parameters were used for the calculations. The classification scheme is illustrated in Figure 7.1

7.3.3.1 Measured Resources

Measured resources include those resources delineated through establishment of exploration data points and therefore reported with confidence as to the character and continuity of the coal seams. The maximum distance between data points, which may include adits, drill holes, trenches and outcrops, is 300 metres.

FIGURE 7.1
MOUNT KLAPPAN COAL PROPERTY
1985 RESOURCE CLASSIFICATION SCHEME



7.3.3.2 Indicated Resources

Indicated resources include resources which are delineated using established data points as well as reasonable geological projections. The maximum distance between data points is 600 metres.

7.3.3.3 Inferred Resources

Inferred resources include resources which are delineated utilizing regional geological data including data points which predict the continuity of coal seams. Report ER79-9 does not state a data point spacing for this category. For the purposes of standardization for the 1984 Mount Klappan Coal Project resource calculations, a maximum data point spacing of 2000 metres was used for the inferred level. However, in the Hobbit-Broatch Area, inferred resources were calculated over the entire 1:2500 map area due to the continuity of coal seams in that area.

7.3.3.4 Speculative Resources

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

8.0 COAL QUALITY

8.1 Summary

The 1985 Lost-Fox Area exploration program concentrated on the delineation of the resource potential in the Lost Ridge region. Sedimentological studies, structural interpretations, two extensive diamond drilling programs and associated coal quality analyses have greatly contributed to the understanding of the Klappan Sequence coal seams.

A total of 34 diamond drill holes were completed in 1985 and resulted in over 6 100 metres of core. Over 160 coal and carbonaceous zone intersections resulted in the laboratory analysis of over 375 metres of coal core, the results of which are presented in Appendix IV of this report.

Of the 33 hand trenches excavated in the Lost-Fox Area this year 24 were channel samples of I seam taken during the trial cargo operations. The coal quality results of the trenching program are presented in Appendix I.

8.2 Procedures and Parameters

8.2.1 Drilling Program

Coal seams intersected during diamond drilling operations were each logged in detail prior to sampling. The sampling increments of the coal core were determined by the internal stratigraphy of the seam, guided by seam partings

and changes in coal character which were in part delineated through careful analysis of the geophysical log. These samples were subjected to a comprehensive series of analyses as outlined in Figure 8.1.

Routine size analyses concentrated on the percentage of size fractions 50 x 6, 6 x 0.5, 0.5 x 0.15 and 0.15 x 0. Washability analyses were completed on all but the 0.15 x 0 size fraction using the following specific gravities of separation: 1.40, 1.45, 1.50, 1.60, 1.70, 1.80, 2.00 and 2.60. No simulated product analyses were initiated this year though there were some analyses of seam I product produced by the trial cargo pilot plant.

Analytical results assisted in the delineation of resource and product potential and helped in seam correlations, geological investigations and environmental interpretations. The reliability of the various analyses for each seam has been greatly enhanced due to improved correlations and the large number of coal quality results obtained.

The data collected on drill hole seam coal quality is presented in Appendix IV. Table 8.1 shows straight averaged analytical results for those drilled seams used in this year's resource calculations. Discussions on individual seam characteristics or the significance of the quality results will be included in an upcoming feasibility study report.

8.2.2 Trenching Program

The bulk of the trenching program in the Lost-Fox Area

FIGURE B.1
DIAMOND DRILL HOLE
CORE ANALYSIS
FLOW SHEET

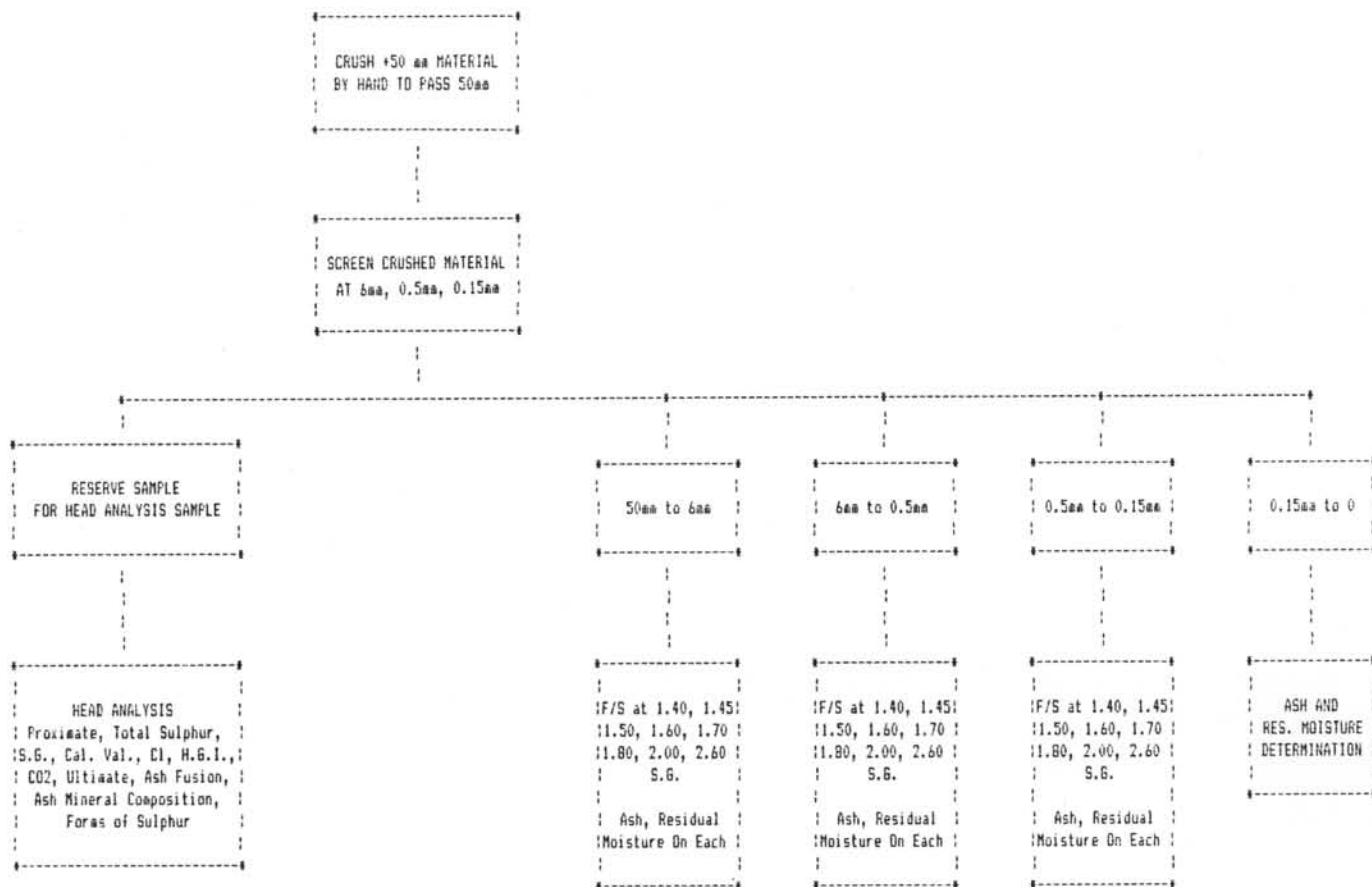


TABLE B.1

AVERAGE DIAMOND DRILL HOLE RAW COAL QUALITY BY SEAM

SEAM	B	C	D	E	F	F/G	G1	G	Gu	PH	H	H/T	I	J	K	K/L	L	L/M	M	Mu	M/H	N	Nu	O	O/P	
PROXIMATE ANALYSIS																										
Residual Moisture	0.84	0.91	1.25	1.45	0.93	1.19	1.34	1.34	0.92	1.32			1.85	2.32	1.55	0.99	1.16		1.56	1.10	0.79	1.10			1.57	
Ash	46.76	44.58	18.19	40.25	52.99	47.52	48.01	42.01	47.39	35.49			25.17	39.63	31.49	42.81	38.72		44.74	32.86	61.29	36.23			36.73	
Volatiles	9.82	7.24	6.50	6.93	8.85	7.52	6.99	6.48	6.53	7.50			6.82	7.82	7.89	7.62	7.57		10.33	6.46	6.53	7.01			6.58	
Fixed Carbon	42.58	47.27	74.06	51.37	37.23	43.77	43.66	50.17	45.16	55.69			66.16	50.23	59.07	48.58	52.55		43.37	59.58	31.39	55.66			55.12	
H.G.I.																										
H.G.I.	67	63	53	59	59	67	56	54	54	55			52	58	53	66	67		64	56	57	58			55	
Specific Gravity	1.72	1.71	1.51	1.72	1.86	1.79	1.80	1.77	1.79	1.67			1.59	1.76	1.61	1.77	1.68		1.81	1.47	2.02	1.67			1.65	
Carbon Dioxide	3.87	2.73	2.02	2.44		3.97	1.66	2.35	2.09	3.05			1.82	3.49	3.02	3.40	2.55		5.61	3.07	4.61	2.35			1.86	
Chlorine (ppm)	1720	1264	964	728	1150	676	308	515	814	546			572	626	603	502	718		548	480	860	451			237	
Sulphur	2.50	0.43	0.51	1.00	1.17	0.55	0.37	2.12	0.55	0.47			0.38	0.34	0.55	0.36	0.63		0.37	0.41	0.22	1.16			0.93	
Calorific Value :																										
Gross(MJ/Kg)	21.80	17.34	27.95	19.20		18.44	15.53	18.51	17.36	21.24			25.71	19.23	22.64	18.20	19.90		16.81	22.50	10.37	21.03			20.75	
Gross(cal/gm)	5210	4144	6680	4589		4407	3712	4424	4149	5076			6145	4596	5411	4350	4756		4018	5378	2478	5026			4959	
ULTIMATE ANALYSIS																										
Carbon	45.40	48.11	74.33	51.70		45.84	43.86	48.85	46.33	57.24			66.52	52.30	60.56	49.46	52.93		46.22	69.71	32.45	56.29			54.65	
Hydrogen	1.87	1.87	2.32	1.77		1.56	1.73	1.72	1.84	1.90			2.26	1.72	2.00	1.76	1.67		1.60	2.02	1.63	1.97			1.79	
Nitrogen	0.40	0.50	0.79	0.61	0.49	0.50	0.63	0.55	0.48	0.61			0.77	0.65	0.72	0.67	0.67		0.63	0.83	0.42	0.74			0.79	
Oxygen	2.23	3.60	2.61	3.22		2.84	4.06	3.41	2.49	2.97			3.05	3.04	3.13	3.95	4.22		4.82	2.07	3.20	2.51			3.54	
ASH FUSION (deg C)																										
Oxidizing																										
Initial	1250	1280	1272	1295		1240	1305	1310	1250	1267			1287	1230	1283	1300	1278		1280	1261	1278	1253			1290	
Softening	1275	1317	1297	1335		1333	1354	1350	1343	1306			1332	1290	1318	1328	1310		1316	1361	1400	1317			1339	
Hemispherical	1286	1356	1321	1366		1365	1383	1366	1395	1337			1365	1330	1342	1357	1334		1341	1378	1444	1371			1378	
Fluidizing	1433	1405	1378	1404		1409	1440	1399	1460	1401			1413	1390	1379	1419	1408		1377	1456	1544	1415			1422	
Reducing																										
Initial	1200	1238	1231	1223		1173	1251	1206	1210	1224			1231	1190	1211	1235	1207		1207	1208	1250	1211			1220	
Softening	1253	1279	1255	1269		1273	1302	1248	1290	1269			1290	1240	1253	1284	1240		1235	1289	1395	1268			1297	
Hemispherical	1272	1332	1276	1302		1305	1335	1301	1300	1300			1325	1285	1276	1301	1274		1260	1306	1433	1302			1335	
Fluidizing	1383	1377	1333	1375		1382	1431	1355	1405	1383			1393	1390	1343	1393	1361		1342	1403	1483	1380			1398	
ASH MINERAL ANALYSIS																										
SiO2	53.89	58.94	44.33	55.80	54.94	59.20	61.97	58.86	62.37	57.14			56.25	63.38	49.38	57.49	55.35		54.17	59.39	71.28	55.87			62.68	
Al2O3	13.52	19.06	22.03	19.92	16.86	14.66	19.72	18.01	17.56	18.99			21.11	17.06	22.50	21.93	20.06		19.38	21.89	13.31	21.60			17.12	
Fe2O3	3.49	4.37	6.66	8.13		7.13	5.87	8.93	5.00	5.62			6.06	5.60	8.83	6.14	6.12		7.96	5.14	3.33	5.96			4.81	
TiO2	0.90	0.95	0.89	0.92		0.59	0.96	0.89	0.45	0.93			0.88	0.66	1.14	1.36	1.15		0.90	1.41	0.75	1.31			0.87	
P2O5	0.70	0.58	2.54	0.65		0.57	0.59	0.40	0.43	0.65			0.94	0.19	1.50	0.22	1.40		0.64	0.29	0.27	0.95			1.45	
CaO	10.24	5.65	10.08	3.56		6.87	2.36	2.36	2.73	5.94			4.40	4.68	4.87	2.88	5.70		5.69	2.90	3.64	3.73			4.23	
MgO	4.20	3.28	4.70	3.16	1.59	3.80	2.61	2.45	2.42	3.46			2.93	3.07	3.86	2.41	2.83		4.40	1.73	22.50	2.36			3.36	
SO3	2.09	1.29	4.12	2.55		2.69	2.93	3.08	1.17	2.63			2.56	3.32	3.44	2.75	3.23		2.23	3.03	2.58	3.22			2.56	
Na2O	1.15	1.87	1.63	1.57		1.41	1.25	1.21	1.33	1.75			1.88	1.17	1.82	2.10	1.85		1.50	1.92	1.30	2.34			1.40	
K2O	0.97	1.69	1.23	1.79		0.95	2.29	1.65	1.83	1.04			1.31	0.60	1.66	2.01	1.64		1.31	1.89	0.95	1.31			1.26	

NOTE : Table represents a straight averaging of diamond drill hole coal quality data for those seams used in resource calculations.

centred in the trial cargo area. Exposed seams were logged in detail and sample intervals were chosen based on the seam log. Small channel samples of constant dimension were collected perpendicular to the strike and dip of the seam. Substantial partings or changes in coal character were cause for sampling of the seam by ply so that the nature of variations across the seam could be traced. For the most part, however, a single sample was taken to transect and represent the whole seam.

The analytical program applied is outlined in Figure 8.2. All analyses, except vitrinite reflectance, were completed at Loring Laboratories Limited of Calgary, Alberta. The few samples for vitrinite reflectance determinations were sent to D.E. Pearson and Associates Limited of Victoria, British Columbia. All trenches had raw head analyses completed and the trial cargo samples had washability studies done using specific gravities of 1.45, 1.60, 2.00 and 2.60. Table 8.2 summarizes the straight average raw analysis of samples collected during the trenching program.

FIGURE 8.2
TRENCH ANALYSIS
FLOW SHEET

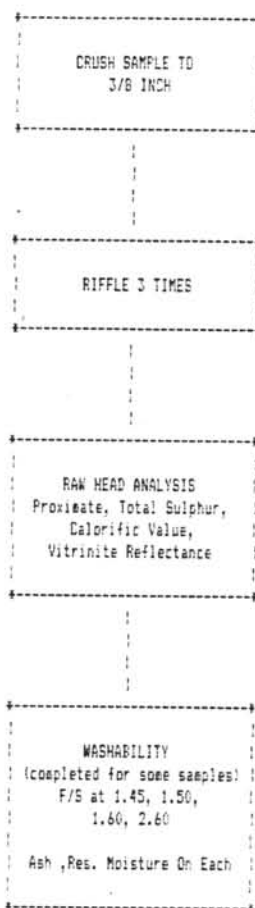


TABLE B.2

MOUNT KLAPPAN COAL PROJECT
LOST-FOX AREA

1985 AVERAGE TRENCH COAL QUALITY ANALYSIS
FOR I SEAM

Residual Moisture	3.27 %
Ash	18.91 %
Volatile Matter	7.07 %
Fixed Carbon	71.11 %
Sulphur	0.44 %
Calorific Value	26.70 MJ/KG
	6381 cal/gm

Note: represents straight averages of all I seam trench coal quality results from within the trial cargo pit area.

9.0 LIST OF REFERENCES

AMERICAN SOCIETY for TESTING and MATERIALS, 1980, Part 26 Gaseous Fuels; Coal and Coke; Atmospheric Analysis.

BUCKHAM, A.F., and LATOUR, B.A., 1950, The Groundhog Coalfield, British Columbia, Geological Survey of Canada, Bulletin 16, 81 pg.

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

EISBACHER, G.H., 1974(a), Deltaic Sedimentation in the Northeastern Bowser Basin, British Columbia, Geological Survey of Canada, Paper 73-33, 13 pg.

EISBACHER, G.H., 1974(b), Evolution of Successor Basins in the Canadian Cordillera: in Dott, R.H. and Shaver, R.H. eds, Modern and Ancient Geosyncline Sedimentation: Society of Economic Paleontologists and Mineralogists, Special Publication No. 19, 274-291 p.

EISBACHER, G.H., 1981, Late Mesozoic - Paleogene Bowser Basin Molasse and Cordilleran Tectonics, Western Canada: in Miall, A.D., ed., Sedimentation and Tectonics in Alluvial Basins: Geological Association of Canada, Special Paper 23, 125 - 151 pg.

FRUMERMAN, R. and BAETENS, C., 1984, Universal Size Distribution of Run of Mine Bituminous Coals in the Eastern U.S.A., Fuel, Vol. 63, May, 1984.

ENERGY, MINES and RESOURCES, CANADA, Report 79-9, Coal Resources and Reserves of Canada, 1979.

GULF CANADA RESOURCES INC., 1981 Mount Klappan Coal Project Geological Report.

GULF CANADA RESOURCES INC., 1982, Mount Klappan Coal Project Geological Report.

GULF CANADA RESOURCES INC., 1983, Mount Klappan Coal Project Geological Report.

MALLOCH, G.S., 1914, The Groundhog Coalfield, B.C.; Geol. Surv., Canada, Sum. Rept. 1912, pp. 69-101.

RICHARDS, T.A., and GILCHRIST, R.D., 1979, Groundhog Coal Area, British Columbia: Geological Survey of Canada Paper 79-1B, 411-414 pg.

TIPPER, H.W., and RICHARDS, T.A., 1976. Jurassic Stratigraphy and History of North-Central British Columbia: Geological Survey of Canada Bulletin 270, 73 pg.

APPENDIX A

STATEMENTS OF QUALIFICATIONS

STATEMENT OF QUALIFICATIONS

VIRGINIA L. DUFORD

P.GEOL.

This is to certify that I obtained a Bachelor of Science Degree in Geology and Chemistry at the University of Western Ontario in 1979.

My geological experience has included mineral exploration in Quebec and Ontario, and coal, oil, and gas exploration in the western provinces of Canada. I have been employed as a Geologist in the Coal Division of Gulf Canada Limited since October, 1981.

STATEMENT OF QUALIFICATIONS

ERIC SWANBERGSON

This is to certify that I obtained my Bachelor of Science Degree geology at Concordia University in 1979.

My geological experience has been gained in mineral, petroleum and coal exploration in western Canada and the Arctic Islands. I have been employed as a Geologist with Gulf Canada Limited since late 1980.

STATEMENT OF QUALIFICATIONS

JOHN W. INNIS

This is to certify that I obtained a Bachelor of Science Degree in Geological Science at Queen's University in 1977, and a Master of Science Degree in Geology at the University of Western Ontario in 1980.

My geological experience includes involvement in mineral exploration and mapping programs in Newfoundland, Saskatchewan and British Columbia for three summers, and latterly seven summers in coal exploration in northeastern and north-central British Columbia. I have been employed as a Geologist in the Coal Division of Gulf Canada Limited since 1980 and have participated in the continuing evaluation and development of Gulf's Mount Klappan property.

STATEMENT OF QUALIFICATIONS

KIMBERLEY A. JENNER

This is to certify that I obtained a Bachelor of Science Degree in Geology from Dalhousie University in 1982.

My geological experience has been gained through mineral exploration in the Atlantic Provinces and Quebec and coal exploration and drilling programs in northwestern British Columbia. I have been employed as a Geologist with the Coal Division of Gulf Canada Limited since my graduation in May, 1982.

STATEMENT OF QUALIFICATIONS

JURGEN THUMULT

This is to certify that I obtained a B.A. degree in Geography and Geology at Concordia University of Montreal, Quebec, in 1981. At present, I am completing an M.Sc. degree in geological applications of remote sensing at McGill University in Montreal.

During the past five field seasons I have participated in the exploration for uranium, base and precious metals in the Appalachians, the Canadian Shield and the Cordillera. Two of those seasons were spent as party chief. For two years I was a teaching assistant for structural geology at Concordia University. I have led numerous field excursions for structural geology in the Appalachians and contributed several times to international conferences on remote sensing and exploration geology.

STATEMENT OF QUALIFICATIONS

BRIAN W. GLOVER

This is to certify that I obtained my Bachelor of Science degree from the University of Waterloo, and a Master of Science degree in Geography from the University of Alberta in 1979.

Since graduation my geological experience includes involvement in coal exploration, hydrogeological studies and regional stratigraphic analyses programs. I have been directly involved in several coal exploration programs throughout southern Saskatchewan, eastern and west-central Alberta and southeastern British Columbia, where my responsibilities have included structural (mapping, core and geophysical log analyses, reserve calculations and supervision of rotary and diamond drilling operations.

STATEMENT OF QUALIFICATIONS

SHARON MACLEOD

This is to certify that I obtained my Bachelor of Science Degree in geology from the University of Calgary in 1985.

I have gained my geological experience through field mapping of uranium and coal in the Northwest Territories and southeast and northwest British Columbia, and by involvement in the structural analysis of the Trial Pluton and Castelgar Gneiss fault zone. I have participated in paleontological studies and coal property evaluation of Gulf's Mount Klappan leases for the past two field seasons.

STATEMENT OF QUALIFICATIONS

BRAD E.R. VAN DEN BUSSCHE

This is to certify that I obtained my Bachelor of Science Degree in Earth Sciences at The University of Manitoba in 1985.

My geological experience includes three summers of mineral exploration in the Northwest Territories, Ontario and the Yukon Territory as well as two summers of coal exploration in British Columbia. I have been employed as a Geologist with Gulf Canada Limited since my graduation in May, 1985.

STATEMENT OF QUALIFICATIONS

MARGARET A. BARKER

This is to certify that I obtained my Bachelor of Science (Honours) Degree in Geology from The University of Manitoba in 1984.

My geological experience includes base metal exploration in northern Manitoba, aluminous iron formation research in central Manitoba, as well as exploration drilling projects in southern Africa and northwestern British Columbia.

I have been employed as a Geologist for the Coal Division of Gulf Canada Limited since January, 1985.

STATEMENT OF QUALIFICATIONS

LUC SAVOIE

This is to certify that I obtained my Bachelor of Science Honours Degree in Geology at the University of Manitoba in 1985.

My geological experience has been gained during two summers of exploration in western Canada. I have been employed as a Geologist with Gulf Canada Limited since graduation in May of 1985.

APPENDIX B

LEGAL DESCRIPTION OF LICENCES

Appendix B

MOUNT KLAPPAN COAL PROJECT LICENCES
1984

Lost-Fox Area

Licence	Effective Date	Hectares	Series	Block
7129	Sept. 1/81	281	104-H-2	K
7130	Sept. 1/81	281	104-H-2	K
7133	Sept. 1/81	281	104-H-2	K
7134	Sept. 1/81	281	104-H-2	K
7135	Sept. 1/81	281	104-H-2	K
7138	Sept. 1/81	281	104-H-2	K
7139	Sept. 1/81	281	104-H-2	K
7140	Dec. 31/82	281	104-H-2	K
7143	Dec. 31/82	281	104-H-2	K
7144	Dec. 31/82	281	104-H-2	K
7145	Dec. 31/82	281	104-H-2	K
7146	Sept. 1/81	281	104-H-2	L
7147	Dec. 31/82	281	104-H-2	L
7148	Sept. 1/81	281	104-H-2	L
7149	Sept. 1/81	281	104-H-2	L
7151	Dec. 31/82	281	104-H-2	L
7152	Dec. 31/82	281	104-H-2	L
7153	Sept. 1/81	281	104-H-2	L
7160	Dec. 31/82	281	104-H-7	C
7161	Dec. 31/82	281	104-H-7	C
7162	Dec. 31/82	281	104-H-7	C
7164	Dec. 31/82	280	104-H-7	C
7165	Dec. 31/82	280	104-H-7	C
7166	Dec. 31/82	280	104-H-7	C
7167	Sept. 1/81	75	104-H-7	C
7168	Sept. 1/81	142	104-H-7	C
7169	Dec. 31/82	281	104-H-7	D

Lost-Fox Area (cont'd)

Licence	Effective Date	Hectares	Series	Block
7170	Dec. 31/82	281	104-H-7	D
7171*	Dec. 31/82	140.5	104-H-7	D
7172	Dec. 31/82	280	104-H-7	D
7173*	Dec. 31/82	140	104-H-7	D
7175	Sept. 1/81	94	104-H-7	D
7527	Oct. 21/82	281	104-H-2	K
7529	Oct. 21/82	281	104-H-2	L
7561	June 30/83	21	104-H-7	C

* Licence split between Lost-Fox and Summit-Nass-Skeena Areas

Lost-Fox Area Total Hectares = 8 757.5

Appendix B

MOUNT KLAPPAN COAL PROJECT LICENCES
1985

SUMMIT-NASS-SKEENA AREA

Summit Area				
Licence	Effective Date	Hectares	Series	Block
7171*	Dec. 31/82	140.5	104-H-7	D
7173*	Dec. 31/82	140.0	104-H-7	D
7174	Dec. 31/82	280.0	104-H-7	D
7176	Dec. 31/82	277.0	104-H-7	D
7177	Sept. 1/81	280.0	104-H-7	D
7382	Mar. 15/82	280.0	104-H-6	H
7383	Mar. 15/82	108.0	104-H-6	H
7384	Mar. 15/82	281.0	104-H-7	D
7385	Mar. 15/82	204.0	104-H-7	D
7386	Mar. 15/82	280.0	104-H-7	D
7387	Mar. 15/82	280.0	104-H-7	D
7388	Mar. 15/82	172.0	104-H-7	D
7389	Mar. 15/82	275.0	104-H-7	D
7390	Mar. 15/82	280.0	104-H-7	D
7391	Mar. 15/82	115.0	104-H-7	E
7392	Mar. 15/82	260.0	104-H-7	E
7423	Mar. 15/83	281.0	104-H-7	D
7424	Mar. 15/83	280.0	104-H-7	D
7425	Mar. 15/83	280.0	104-H-7	D
7426	Mar. 15/83	280.0	104-H-7	D
7726	Jan. 10/84	280.0	104-H-6	A
7727	Jan. 10/84	280.0	104-H-6	A
7728	Jan. 10/84	280.0	104-H-6	A
7729	Jan. 10/84	280.0	104-H-6	A
7730	Jan. 10/84	280.0	104-H-6	A

Summit Area (cont'd)

Licence	Effective Date	Hectares	Series	Block
7731	Jan. 10/84	280.0	104-H-6	A
7732	Jan. 10/84	280.0	104-H-6	A
7733	Jan. 10/84	280.0	104-H-6	A
7734	Jan. 10/84	280.0	104-H-6	A
7735	Jan. 10/84	280.0	104-H-6	G
7736	Jan. 10/84	280.0	104-H-6	G
7737	Jan. 10/84	280.0	104-H-6	G
7738	Jan. 10/84	280.0	104-H-6	G
7739	Jan. 10/84	280.0	104-H-6	G
7740	Jan. 10/84	280.0	104-H-6	G
7741	Jan. 10/84	280.0	104-H-6	G
7742	Jan. 10/84	280.0	104-H-6	G
7743	Jan. 10/84	280.0	104-H-6	G
7744	Jan. 10/84	280.0	104-H-6	G
7745	Jan. 10/84	280.0	104-H-6	G
7746	Jan. 10/84	280.0	104-H-6	H
7747	Jan. 10/84	280.0	104-H-6	H
7748	Jan. 10/84	280.0	104-H-6	H
7749	Jan. 10/84	280.0	104-H-6	H
7750	Jan. 10/84	261.0	104-H-6	H
7751	Jan. 10/84	280.0	104-H-6	H
7752	Jan. 10/84	280.0	104-H-6	H
7753	Jan. 10/84	280.0	104-H-6	H
7754	Jan. 10/84	154.0	104-H-6	H
7755	Jan. 10/84	274.0	104-H-6	H
7756	Jan. 10/84	280.0	104-H-6	D
7757	Jan. 10/84	280.0	104-H-6	D
8047	Mar. 29/85	280.0	104-H-6	A
8048	Mar. 29/85	280.0	104-H-6	A

* Licence split between Summit-Nass-Skeena and Lost-Fox Areas.

Summit Area Total Hectares = 14 142.5

Nass Area Licence	Effective Date	Hectares	Series	Block
7150	Sept. 1/81	281	104-H-2	L
7154	Sept. 1/81	281	104-H-2	L
7421	Mar. 15/83	281	104-H-2	L
7422	Mar. 15/83	281	104-H-2	L
7427	Mar. 15/83	281	104-H-3	I
7428	Mar. 15/83	281	104-H-3	I
7429	Mar. 15/83	281	104-H-3	I
7430	Mar. 15/83	281	104-H-3	I
7431	Mar. 15/83	281	104-H-3	I
7432	Mar. 15/83	281	104-H-3	I
7487	Oct. 21/82	281	104-H-3	J
7488	Oct. 21/82	281	104-H-3	J
7505	Oct. 21/82	281	104-H-3	H
7506	Oct. 21/82	281	104-H-3	H
7507	Oct. 21/82	281	104-H-3	H
7508	Oct. 21/82	281	104-H-3	H
7509	Oct. 21/82	281	104-H-3	H
7510	Oct. 21/82	281	104-H-3	H
7511	Oct. 21/82	281	104-H-3	H
7512	Oct. 21/82	281	104-H-3	I
7513	Oct. 21/82	281	104-H-3	I
7514	Oct. 21/82	281	104-H-3	I
7515	Oct. 21/82	281	104-H-3	I
7516	Oct. 21/82	281	104-H-3	I
7517	Oct. 21/82	281	104-H-3	I
7518	Oct. 21/82	281	104-H-3	I
7519	Oct. 21/82	281	104-H-3	I
7520	Oct. 21/82	281	104-H-3	I

Nass Area (cont'd)

Licence	Effective Date	Hectares	Series	Block
7521	Oct. 21/82	281	104-H-3	I
7522	Oct. 21/82	281	104-H-3	I
7523	Oct. 21/82	281	104-H-3	I
7530	Oct. 21/82	281	104-H-2	L
7531	Oct. 21/82	281	104-H-2	L
7532	Oct. 21/82	281	104-H-2	L
7533	Oct. 21/82	281	104-H-2	L
7534	Oct. 21/82	281	104-H-2	L
7535	Oct. 21/82	281	104-H-2	L
7536	Oct. 21/82	281	104-H-2	L
8032	Mar. 29/85	281	104-H-3	J
8033	Mar. 29/85	281	104-H-3	J
8034	Mar. 29/85	281	104-H-3	J
8035	Mar. 29/85	281	104-H-3	J
8036	Mar. 29/85	281	104-H-3	J
8037	Mar. 29/85	281	104-H-3	J
8038	Mar. 29/85	281	104-H-3	J
8039	Mar. 29/85	281	104-H-3	J
8040	Mar. 29/85	281	104-H-3	J
8041	Mar. 29/85	281	104-H-3	J
8042	Mar. 29/85	281	104-H-3	J
8043	Mar. 29/85	281	104-H-3	J
8044	Mar. 29/85	281	104-H-3	J
8045	Mar. 29/85	281	104-H-3	J
8046	Mar. 29/85	281	104-H-3	J
8049	Mar. 29/85	281	104-H-6	B
8050	Mar. 29/85	281	104-H-6	B
8051	Mar. 29/85	281	104-H-6	B
8052	Mar. 29/85	281	104-H-6	B
8053	Mar. 29/85	281	104-H-6	B

Nass Area Total Hectares = 16 298

Skeena Area

Licence	Effective Date	Hectares	Series	Block
7489	Oct. 21/82	282	104-H-2	G
7490	Oct. 21/82	282	104-H-2	G
7491	Oct. 21/82	282	104-H-2	G
7492	Oct. 21/82	282	104-H-2	G
7493	Oct. 21/82	282	104-H-2	G
7494	Oct. 21/82	282	104-H-2	G
7495	Oct. 21/82	282	104-H-2	G
7496	Oct. 21/82	282	104-H-2	G
7497	Oct. 21/82	281	104-H-2	G
7498	Oct. 21/82	281	104-H-2	G
7499	Oct. 21/82	281	104-H-2	G
7500	Oct. 21/82	281	104-H-2	G
7501	Oct. 21/82	281	104-H-2	G
7502	Oct. 21/82	281	104-H-2	J
7503	Oct. 21/82	281	104-H-3	K
7504	Oct. 21/82	281	104-H-3	K
7524	Oct. 21/82	281	104-H-2	K
7525	Oct. 21/82	281	104-H-2	K
7526	Oct. 21/82	281	104-H-2	K
7528	Oct. 21/82	281	104-H-2	L
7537	Oct. 21/82	281	104-H-2	F
7538	Oct. 21/82	281	104-H-2	F
7539	Oct. 21/82	281	104-H-2	F
7714	Jan. 10/84	281	104-H-2	G
7715	Jan. 10/84	281	104-H-2	G
7716	Jan. 10/84	281	104-H-2	G
7717	Jan. 10/84	281	104-H-2	G
7718	Jan. 10/84	281	104-H-2	G
7719	Jan. 10/84	281	104-H-2	G

Skeena Area cont'd

Licence	Effective Date	Hectares	Series	Block
7720	Jan. 10/84	281	104-H-2	G
7721	Jan. 10/84	281	104-H-2	G
7722	Jan. 10/84	281	104-H-2	G

Skeena Area Total Hectares = 9 000

Appendix B

MOUNT KLAPPAN COAL PROJECT LICENCES
1985

Hobbit-Broatch Area

Licence	Effective Date	Hectares	Series	Block
7118	Sept. 1/81	281	104-H-2	J
7119	Sept. 1/81	281	104-H-2	J
7120	Sept. 1/81	32	104-H-2	J
7121	Sept. 1/81	224	104-H-2	J
7122	Dec. 31/82	281	104-H-2	J
7123	Dec. 31/82	281	104-H-2	J
7124	Sept. 1/81	98	104-H-2	J
7125	Dec. 31/82	281	104-H-2	J
7126	Dec. 31/82	281	104-H-2	J
7127	Sept. 1/81	281	104-H-2	K
7128	Sept. 1/81	281	104-H-2	K
7131	Sept. 1/81	281	104-H-2	K
7132	Sept. 1/81	281	104-H-2	K
7136	Dec. 31/82	281	104-H-2	K
7137	Sept. 1/84	281	104-H-2	K
7141	Dec. 31/82	281	104-H-2	K
7142	Dec. 31/82	281	104-H-2	K
7155	Sept. 1/81	61	104-H-7	B
7156	Sept. 1/81	167	104-H-7	B
7157	Sept. 1/81	265	104-H-7	B
7158	Dec. 31/82	281	104-H-7	C
7159	Dec. 31/82	281	104-H-7	C
7163	Dec. 31/82	257	104-H-7	C
7381	Mar. 18/82	281	104-H-2	J
7416	Mar. 15/83	281	104-H-2	J
7417	Mar. 15/83	281	104-H-2	J
7418	Mar. 15/83	281	104-H-2	J
7419	Mar. 15/83	278	104-H-2	J
7420	Mar. 15/83	281	104-H-2	J

Hobbit-Broatch Area (cont'd)

Licence	Effective Date	Hectares	Series	Block
7559	June 30/83	22	104-H-7	B
7560	June 30/83	153	104-H-7	C
7723	Jan. 10/84	281	104-H-2	J
7724	Jan. 10/84	250	104-H-2	J
7725	Jan. 10/84	7	104-H-2	J

Hobbit-Broatch Area Total Hectares = 7 996

APPENDIX C

**DISTRIBUTION OF WORK BY LICENCE
LOST-FOX AREA**

Appendix C
Distribution of Work by Licence

Data Source	Licence	Data Source	Licence
KPNLRDDH85001	7169	KPNLRDDH85031	7152
KPNLRDDH85002	7152	KPNLRDDH85032	7152
KPNLRDDH85003	7151	KPNLRDDH85033	7152
KPNLRDDH00004	7152	KPNLRDDH85034	7152
KPNLRDDH85005	7151	KPNLRRDH85001	7173
KPNLRDDH85006	7151	KPNLRRDH85002	7172
KPNLRDDH85007	7151	KPNLRRDH85003	7170
KPNLRDDH85008	7151	KPNLRRDH85004	7172
KPNLRDDH85009	7151	KPNLRRDH85005	7153
KPNLRDDH85010	7151	KPNLRDDH85006	7153
KPNLRDDH85011	7151	KPNLRTRC85004	7151
KPNLRDDH85012	7151	KPNLRTRC85006	7151
		KPNLRTRC85007	7151
KPNLRDDH85013	7151	KPNLRTRC85008	7151
KPNLRDDH85014	7152	KPNKHTRC85013	7138
KPNLRDDH85015	7152	KPNKHTRC85014	7143
KPNLRDDH85016	7152	KPNKHTRC85015	7143
KPNLRDDH85017	7151	KPNKHTRC85016	7143
KPNLRDDH85018	7152	KPNKHTRC85017	7143
KPNLRDDH85019	7169	KPNLRTRC85030	7152
KPNLRDDH85020	7152	KPNLRTRC85031	7152
KPNLRDDH85021	7170	KPNLRTRC85032	7152
KPNLRDDH85022	7151	KPNLRTRC85033	7152
KPNLRDDH85023	7151	KPNLRTRC85034	7152
KPNLRDDH85024	7151	KPNLRTRC85035	7152
KPNLRDDH85025	7151	KPNLRTRC85036	7152
KPNLRDDH85026	7151	KPNLRTRC85037	7152
KPNLRDDH85027	7147	KPNLRTRC85038	7152
KPNLRDDH85028	7151	KPNLRTRC85039	7152
KPNLRDDH85029	7151	KPNLRTRC85040	7152
KPNLRDDH85030	7152	KPNLRTRC85041	7152

Appendix C
Distribution of Work by Licence

Data Source	Licence
KPNLRTRC85042	7152
KPNLRTRC85043	7152
KPNLRTRC85044	7152
KPNLRTRC85045	7152
KPNLRTRC85046	7152
KPNLRTRC85047	7152
KPNLRTRC85048	7152
KPNLRTRC85049	7152
KPNLRTRC85050	7152
KPNLRTRC85051	7152
KPNLRTRC85052	7152
KPNLRTRC85053	7152
KPNLROTC85001	7169
KPNLROTC85002	7151
KPNKHOTC85004	7138
KPNKHOTC85005	7138
KPNKHOTC85014	7147

APPENDIX D

LISTING OF FOSSILS

LIST OF FAUNA MACROFOSSILS FROM MOUNT KLAPPAN
1984 - 1985

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (Stelck)	COMMENTS
GD8400310A	Summit North	Lowermost Klappan Sequence [upper Spatsizi Sequence(?)]	<u>Herzogina</u> sp., <u>Staffinella</u> sp; <u>Ostrea</u> sp; <u>Astarte</u> sp. A., <u>Astarte</u> sp. B., <u>Limopsis</u> sp., <u>Neridomus</u> sp., <u>Globularia</u> sp.*, <u>Zygopleura</u> , <u>turritellid</u> snail, <u>Camptonectes</u> , (?) ammonite (un- identified)	Marine Association *Foraminifera
GD8400310B	Summit North	Lowermost Klappan Sequence [upper Spatsizi Sequence (?)]	<u>Herzogina</u> sp., <u>Staffinella</u> sp., <u>belemnite</u> (unidentified)	Marine Association
GD8400411	Summit North	Lowermost Klappan [upper Spatsizi Sequence (?)]	<u>Staffinella</u> sp.	Same beds as GD840310B, Same species as GD8400310A,B
GD8400506	Summit North	Lowermost Klappan [upper Spatsizi Sequence (?)]	<u>Isocyprina</u> trans. to <u>Venericyprina</u> <u>Ostrea</u> sp., <u>Entolium</u> (?), <u>Modiolus</u> <u>Staffinella</u> sp., <u>Herzogina</u>	Similar association as GD8400310A
GD8400510	Summit North	Lowermost Klappan - [upper Spatsizi Sequence (?)]	<u>Modiolus</u> sp; <u>Ostrea</u> sp.	Brackish water (possibly estuarial) association
GD840913	W.Nass - new leases	Spatsizi Sequence (possibly Klappan Sequence)	<u>Buchia</u> sp. cf. <u>B. mosquensis</u> , <u>Entolium</u> sp. <u>Eocalista</u> sp., <u>Epilucina</u> sp.	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (Stelck)	COMMENTS
GD8423060A (or OTC8405)	Spatsizi Park	Uppermost Spatsizi Sequence	<u>Paratancredia (?)</u> , <u>Laevidentalium</u> , <u>Astarte sp.</u> , <u>Glycimerid indet.</u> , <u>Staffinella sp.</u> , turritellid <u>gastropod</u>	Similar association as SM84009
GD842407	Summit NW-just off property	Spatsizi Sequence	<u>Acesta (?) sp. A.</u> , <u>Hypoxytoma sp.</u> , <u>Buchia concentrica var. erringtoni</u>	Similar association as SM8400401 and KJ8400806
GD842420B	Summit NW-just off property	Spatsizi Sequence	<u>Acesta sp. B</u>	
GD842422	Summit NW-just off property	Spatsizi Sequence	Fragment of Lytoceratid ammonite	
SM830101A, B	Repeater Ridge	Spatsizi-Klappan Boundary Region	<u>Oxytoma inequivaluis</u> , <u>Camptonectes</u> <u>sp.</u> , <u>Pleuromya sp.</u> , <u>Pleuromya</u> <u>subcompressa</u>	Shallow marine association showing very little hint of lessening of salinity
SM831819A	Summit North	Lower Klappan Sequence (?)	<u>Acesta</u> , <u>Entolium sp.</u> , <u>Ostrea</u> <u>Gryphaea?</u> , <u>Corbula</u>	
SM831819B	Summit North	Lower Klappan Sequence (?)	<u>Plagiostoma</u> , Monotid, <u>Pteria sp.</u> , <u>Mactra (?)</u>	
SR5	Spatsizi Park east; same ridge as SR6	Spatsizi Sequence	<u>Pleuromya sp.</u> , <u>Quenstedtia aff.</u> <u>Q. ferniensis</u> , <u>Pseudoboletus</u> , <u>Belemnopsis sulcatus trans.</u> <u>to absolutus</u>	Same belemnite species as GD8400118

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (Stelck)	COMMENTS
SR6	Spatsizi Park east side; same ridge as SR5 and SR7	Spatsizi Sequence	<u>Venericyprina</u> , <u>Pleuromya</u> , <u>Astarte</u> , <u>Ostrea?</u> , or <u>Gryphaea</u> , <u>Limopsis</u> , <u>Myrene</u>	Reduced salinity
SR7	Spatsizi Park east side; same ridge as SR5 and SR6	Spatsizi Sequence	<u>Laevitrigonia</u> sp. C, <u>Laevitrigonia</u> sp. A aff. <u>L. gibbosa</u> , <u>Ibotrigonia</u> sp. B, <u>Herzogina</u> sp., <u>Buchia</u> <u>fischeriana</u> , <u>Lucinid</u> indet., <u>Ostrea(?)</u> , <u>Astarte(?)</u>	<u>Herzogina</u> sp. same as GD840310A,B
JT8400511F	Between Knooph Hill and Mt. Klappan	Uppermost coal-bearing Klappan Sequence	<u>Ferganoconcha</u>	Fresh water
TRC8360	Summit South	Middle Klappan Sequence	<u>Eocallista</u> sp. cf. <u>E. regularis</u>	
GD84001-18	Spatsizi Park	Upper Spatsizi Sequence	<u>Belemnopsis</u> sp. cf. <u>B. sulcata</u>	Same as SR5
GD84001-18	Spatsizi Park	Upper Spatsizi Sequence	<u>Laevitrigonia</u> sp. A aff. <u>L.</u> <u>gibbosa</u> , <u>Hypoxytoma</u>	Same as SR7
ES840403	NE Nass	Lower Klappan Sequence	<u>Anopaea</u> , <u>Isocyprina</u> sp.	
OTC8405A (or GD8423)	Spatsizi Park	Upper Spatsizi	<u>Astarte</u> sp., <u>Dentalium</u> sp., <u>Limopsis</u> sp.	
GS840702	NE of Didene Creek	Middle Klappan Sequence	<u>Ferganoconcha</u> sp.	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (Stelck)	COMMENTS
KJ8400806	Lost Ridge-E end	Klappan Sequence in vicinity of P seam	<u>Acesta</u> (?) sp. B	
DDH84004	Hobbit-Broatch	Mid Klappan Sequence between Seams F and H	<u>Ferganoconcha</u> sp.	
SM8400401	Summit North W. end near BCR, above "G seam"	Lower-middle Klappan Sequence	<u>Somapecten</u> sp., <u>Acesta</u> sp. A	Same as GD842407 and KJ840406
SM840916	Summit North	Lower-middle Klappan; lower than SM840401	<u>Pleuromya</u> sp., <u>Laevitrigonia</u> sp. cf. A aff. <u>L. gibbosa</u> , <u>Laevidentalium</u> sp., <u>Herzogina</u>	<u>Laevitrigonia</u> species same as SR7; <u>Herzogina</u> species same as GD8400310A
SM8401006	Nass just N of new leases	Spatsizi Sequence	<u>Laevitrigonia</u> sp. A. aff. <u>L.</u> <u>gibbosa</u>	Same as SR7 and SM8400916
SR4	--	--	<u>Laevitrigonia</u> sp. A. aff. <u>L.</u> <u>gibbosa</u>	Same as SR7 and SM8400916

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM0515106	Summit North; Layton Ridge	Lower-middle Klappan Sequence	<u>Ostrea</u> (?)	
SM851206	Horseshoe Ck.; Nass	Klappan Sequence	Bivalves - 3-5 species, unidentif- ied	
SM852304	Summit North; Marshall Ridge N. Face	Middle-lower Klappan Sequence	Bivalves, unidentified	
KG850205	Summit South	Middle Klappan Sequence	Bivalves, unidentified	
SM852402	Summit North; Valley N of Layton Ridge	Middle-lower Klappan Sequence	<u>Helminthopsis</u>	Trace fossil
SM852301	Summit North; Marshall Ridge	Middle-lower Klappan Sequence	<u>Helminthopsis</u> , <u>Scolithos</u>	Trace fossils
SM8530	Summit South	Middle-lower Klappan Sequence	<u>Helminthopsis</u>	Trace fossil
SM863101-04	Dante Creek, Summit South	Lower Klappan Sequence	Bivalves (unidentified), hor- izontal worm burrow	
OTC84003	Summit North; Marshall Ridge	Middle-lower Klappan Sequence	<u>Belemnopsis</u>	Cross-section only of belemnite

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM8532106	Summit North; Layton ridge	Middle-lower Klappan Sequence	Vertical and angular burrows (un- identified), bivalves (unidentif- ied)	
KJ85011-2	Just W of Spatsizi River	Spatsizi - Klappan Boundary area	<u>Helminthopsis</u>	Trace fossil
KF8521	Ridge W of Helm Creek	Klappan - Spatsizi Boundary area	<u>Belemnopsis</u> , bivalves (unidentif- ied)	
KF852301-09	W Nass, north of Klappan River	Spatsizi Sequence	Bivalves; unidentified	
KJ85007-1 (OTC8508)	Spatsizi Park	Upper Spatsizi Sequence	Bivalves; unidentified	
KJ85010-3	Spatsizi Park W of Butler Creek	Uppermost Spatsizi-Lower Klappan Sequence	Bivalves; unidentified	Occurs with plant hash
KJ85021-2	Summit North	Uppermost Spatsizi - lower Klappan Sequence	<u>Ostrea, Staffinella</u> , other un- identified bivalves	
KJ85016-1	Above Helm Creek in NW Nass	Klappan Sequence	<u>Belemnopsis</u>	Belemnite
KJ85015-1	Kay Ridge; Just N of Nass Licences	Upper Spatsizi - lower Klappan Sequence	<u>Helminthopsis</u> , bivalves (un- identified)	Occurs with minor coal- ified plant material

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
KJ85010-2 (OTC85009)	Spatsizi Park; Ridge W of Butler Creek	Uppermost Spatsizi - lower Klappan Sequence	<u>Belemnopsis</u>	Belemnite
KJ85003-1 (OTC85003)	Spatsizi Park	Spatsizi Sequence	<u>Helminthopsis</u>	Trace fossil
KJ85003-2	Spatsizi Park	Spatsizi Sequence	<u>Helminthopsis</u>	Trace fossil
SM852303	Summit North	Middle - lower Klappan Sequence	<u>Belemnopsis</u>	Belemnite
SM852304	Summit North	Middle - lower Klappan Sequence	Bivalves, unidentified	
GD840118	Spatsizi Park	Spatsizi Sequence	<u>Belemnopsis</u>	Belemnite
GD840508	Summit North	Klappan (?) Sequence	Bivalves, unidentified	
GD840907	NW Nass, N of Klappan River	Klappan (?) Sequence	Bivalves, unidentified	
GD840924	NW Nass, N of Klappan River	Klappan (?) Sequence	<u>Diplocraterion, Skolithos</u>	Trace fossils
GD841108	Skeena Area	Malloch Sequence	Bivalves, unidentified	
GD841704	Skeena Area	Malloch Sequence	<u>Skolithos</u> burrow	Trace fossil

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
GS840702	Didene Creek	Middle (?) Klappan Sequence	Bivalves, unidentified	
SM842701	Summit North just N of Layton Ridge	Lower-middle Klappan Sequence	Bivalves, unidentified	
OTC8401	Summit North	Middle-lower Klappan Sequence	Bivalves, unidentified	
OTC8405	Spatsizi Park	Spatsizi-Klappan Boundary region	<u>Belemnopsis</u> , bivalves (un- identified)	Belemnite
KJ840806	Lost Ridge	Middle Klappan Sequence	Bivalves, unidentified	
SM841116	W. Nass	Klappan Sequence	Bivalves, unidentified	

LIST OF PLANT MACROFOSSILS FROM MOUNT KLAPPAN
1984 - 1985

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
DDH84006	Lost Ridge top box 50, 116 m from top	Zone I in middle Klappan Sequence - between I seam and bentonite	<u>Sphenopteris brulensis</u> , <u>Nilsson</u> <u>cf. tenuicaulis</u>	
DDH84005	Lost Ridge box 16, 32-33m from top	Below G ph and above Gu seam in mid Klappan Sequence	<u>Czekanowskia cf. rigida</u>	
SM85001	Mt. Klappan	Malloch Sequence about 300 m from contact	<u>Cladophlebis virginensis</u> <u>martiniana</u> , <u>Ginkgo nana</u> , <u>Nilsson</u> <u>sp.</u> , <u>Pityophyllum nordenskioldii</u>	same location as SR1
SM85002	Lost Ridge W end	Klappan Sequence above seam F	<u>Nilsson</u> <u>cf. tenuicaulis</u> , <u>Pityophyllum nordenskioldii</u> , <u>Czekanowskia cf. rigida</u> , <u>Pterophyllum rectangulare</u> <u>Nilsson</u> <u>nigracollensis</u>	
OTC85001	Lost Ridge hogbacks	Klappan Sequence below seam J	<u>Czekanowskia cf. rigida</u> , <u>Pterophyllum rectangulare</u> , <u>Baiera</u> <u>cf. furcata</u> , <u>Cladophlebis</u> <u>virginensis</u>	
SM8500201 (OTC 85002)	Lost Ridge	Klappan Sequence between seams I & J	<u>Sphenopteris brulensis</u> , <u>Nilsson</u> <u>sp.</u> , <u>Czekanowskia cf. rigida</u>	

*See accompanying map KPN85004 for fossil locations.

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM8500303	Lost Ridge W end	Below I seam in middle Klappan Sequence	<u>Nilssonina sp. A., Baiera cf.</u> <u>furcata, Czekanowskia cf. rigida</u>	
SM8500401 (OTC85004)	Knooph Hill top	Malloch within 200 - 300 m (true thickness) of Klappan content	<u>Nilssonina sp., Cladophlebis</u> <u>virginiensis, Czekanowskia cf.</u> <u>rigida, Ginkgo nana, Pityophyllum</u> <u>nordenskioldii, Pterophyllum</u> <u>rectangulare</u>	
SM85005 (OTC85005)	Knooph Hill front face, E end	Malloch Sequence (?)	Unidentified species (cf. Podozamites), <u>Cladophlebis</u> <u>virginiensis, Czekanowskia cf.</u> <u>rigida, Ginkgo, cf. leptida,</u> <u>Pterophyllum rectangulare,</u> <u>Nilssonina schaubergensis, Baiera</u> <u>cf. furcata</u>	
SM850901	Knooph Hill beds correlat- eable with OTC 85004	Malloch Sequence	<u>Czekanowskia cf. rigida*,</u> <u>Pterophyllum rectangulare*,</u> <u>Cladophlebis virginiensis**,</u> <u>Nilssonina schaubergensis*,</u> <u>Pityophyllum nordenskioldii</u>	*Abundant **Just downsection
SM850906	Broatch Creek before anti- cline closest to Knooph Hill; above coal	Lower Malloch Sequence	<u>Ginkgo nana, Baiera cf. furcata,</u> <u>Pterophyllum rectangulare,</u> <u>Cladophlebis virginiensis</u>	
SM85011	Horseshoe Ridge	Middle Malloch Sequence	<u>Baiera, cf. furcata, Nilssonina,</u> <u>nigracollensis*, Czekanowskia cf.</u> <u>rigida, Cladophlebis virginiensis</u> <u>martiniana</u>	*Very abundant; <u>Nilssonina nigracollensis</u> abundance decreases and <u>Cladophlebis virginiensis</u> increases down section
SM850903	Knooph Hill beds laterally equivalent to OTC85005	Lower-middle Malloch Sequence	<u>Cladophlebis virginiensis,</u> <u>Czekanowskia cf. rigida,</u> <u>Pterophyllum rectangulare</u>	All abundant

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM8505 (OTC85005)	Knooph Hill just below OTC85004	Mid-lower Malloch Sequence	<u>Cladophlebis virginiensis</u> ,* <u>Czekanowskia cf. rigida</u> * <u>Podozamites</u> *, <u>Ginkgo cf. lepida</u> ,* <u>Pterophyllum rectangulare</u> , <u>Nilssonia schaumbergensis</u>	*Abundant throughout, particularly <u>C</u> cf. <u>rigida</u>
SM850904	Broatch Creek just down- section from OTC85005	Lower Malloch Sequence	<u>Podozamites cf. lanceolatus</u> , <u>Czekanowskia cf. rigida</u> <u>Cladophlebis virginiensis</u>	
SM851001	Broatch Creek about 230 m down creek	Lowermost Malloch Sequence	<u>Ginkgo nana</u> *, <u>Baiera furcata</u>	*Abundant
SM851002	Broatch Creek ESE of hog- backs on E side of creek	Lower Malloch Sequence	<u>Ginkgo nana</u> , <u>Baiera furcata</u> , <u>Czekanowskia cf. rigida</u>	
SM851004	Broatch Creek just down- section from SM851002	Lower Malloch Sequence	<u>Nilssonia canadensis</u> , <u>Czekanowskia</u> <u>cf. rigida</u> , <u>Podozamites cf.</u> <u>lanceolatus</u> , <u>Pterophyllum</u> <u>rectangulare</u>	
SM851101	Tahtsedle Ck. area near Horseshoe Ridge	Lower-middle Malloch Sequence	<u>Czekanowskia cf. rigida</u> , <u>Ginkgo</u> <u>nana</u>	Both abundant
SM851102	Tahtsedle Ck. just down- section from last location	Lower-middle Malloch Sequence	<u>Czekanowskia cf. rigida</u> , <u>Ginkgo</u> <u>nana</u> , <u>Nilssonia nigracollensis</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM851103	Tahtsedle Ck. Horseshoe Ridge area	Lower-middle Malloch Sequence down section from SM851102	<u>Baiera gracilis</u> , <u>Cladophlebis</u> <u>virginiensis</u> , <u>Nilsson</u> <u>nigracollensis</u> , <u>Czekanowskia</u> <u>cf. rigida</u>	Decrease in mudstone and siltstone downsection and plants associated with them; <u>Cladophlebis</u> <u>virginiensis</u> becomes one of a few species found in abundance
SM851304 (TRC85018)	Horseshoe Ck. Tahtsedle Ck. area	Klappan Sequence	<u>Nilsson</u> <u>tenuicaulis</u>	
SM8515	Summit North Marshall Ridge	Lower-middle Klappan Sequence	<u>Cladophlebis virginiensis</u> *, <u>Nilsson</u> <u>canadensis</u> *, <u>Pityophyllum nordenskioldii</u>	*Minor
SM851601 SM851608	Summit North Layton Ridge	Middle Klappan Sequence - underlying TRC83049	<u>Nilsson</u> <u>tenuicaulis</u>	overall very few plant fossils in this portion of the middle Klappan Sequence - abundant bi- valves (unidentified) present
SM851806	Lost Ridge Haul Road South of Survey Pt 2971	Middle Klappan Sequence near coaster zone	<u>Ginkgo nana</u>	
SM851903	Lost Ridge Haul Road just above TRC85029	Middle Klappan Sequence near G seam	<u>Czekanowskia cf. rigida</u> , <u>Nilsson</u> <u>schaumbergensis</u> , <u>Pityophyllum nordenskioldii</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM852403	Summit North; valley below facing BCR	Middle-lower Klappan Sequence	<u>Czekanowskia cf. rigida,</u> <u>Pityophyllum nordenskiöldii</u>	
SM852404	Summit North Valley below facing BCR	Middle-lower Klappan Sequence	<u>Ginkgo nana (?)</u>	Very large
SM852407	Summit North Valley below facing BCR	Middle-lower Klappan Sequence	<u>Nilssonia tenuicaulis,</u> <u>Nilssonia schaubergensis</u>	
SM8527	Summit South N of DDH82002	Middle-lower Klappan Sequence	<u>Nilssonia tenuicaulis</u>	
SM852803	Summit South Tiger striped unit overlying coal in TRC 83052	Middle-lower Klappan Sequence	<u>Nilssonia schaubergensis,</u> <u>Czekanowskia cf. rigida,</u> <u>Nilssonia tenuicaulis</u>	
SM8532	Repeater Ridge Summit North	Lowermost Klappan Sequence	<u>Nilssonia tenuicaulis,</u> <u>Nilssonia schaubergensis,</u> <u>Cladophlebis virginiensis</u>	Occurs with abundant bi- valves (unidentified) and <u>Helminthopsis</u>
SM8533 (OTC85018)	SW Nass, Ripple Creek	Upper Klappan - Lower Malloch Sequence	<u>Czekanowskia cf. rigida,</u> <u>Cladophlebis virginiensis</u> <u>Fisheri*, Sphenopteris cf.</u> <u>brutensis, Pterophyllum</u> <u>rectangulare, Baiera gracilis</u>	*Minor - latter 5 species minor and exist only at bottom of section

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
OTC85014	Lost Ridge	Upper Klappan Sequence - probably around 0 seam	<u>Sphenopteris cf. brulensis</u> , <u>Nilssonia schaubergensis*</u> , <u>Nilssonia tenuicaulis*</u> , <u>Pityophyllum nordenskiöldii*</u> , <u>Baiera furcata</u> , <u>Podozamites cf.</u> <u>lanceolatus</u> , <u>Ctenis borealis</u>	*Abundant +Very abundant also associated with 2 beds of bivalves and <u>Helminthopsis</u>
SM85340307	SW Nass-out- side of lic- ences	Lower Rhondda Sequence	<u>Czekanowskia cf. rigida</u> , <u>Cladophlebis virginiensis</u>	Overall very few plants; <u>C. cf. rigida</u> increases downsection
SM842905A, D SM842906	Summit South	Middle Klappan Sequence	<u>Ginkgo nana</u> , <u>Cladophlebis</u> <u>virginiensis martiniana</u> , <u>Cladophlebis virginiensis acuta</u> <u>Nilssonia sp.</u>	
SD840107	--	--	<u>Cladophlebis virginiensis</u>	
SD840202	Tahtsedle Ck. area	Middle Malloch Sequence	<u>Nilssonia nigracollensis</u>	
SD840301	--	--	<u>Cladophlebis virginiensis</u>	
SD841001	--	--	<u>Nilssonia sp.</u> , <u>Nilssonia</u> <u>brongniarti</u> , <u>Czekanowskia cf.</u> <u>rigida</u>	
SM843202A SM843202E	Summit North	Lower-middle Klappan Sequence	<u>Nilssonia sp.</u> <u>Nilssonia brongniarti</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM840916	S Nass Area	Malloch Sequence	<u>Czekanowskia cf. rigida,</u> <u>Podozamites cf. lanceolatus</u>	
SM842703	Summit North just W of Marshall and Layton Ridges	Lower-middle Klappan Sequence	<u>Cladophlebis virginiensis</u>	
SM853301	SW Nass-off leases; Ripple Creek	Upper Klappan - lower Malloch Sequence	<u>Czekanowskia cf. rigida</u>	
SM853302	SW Nass-off leases; Ripple Creek	Upper Klappan - lower Malloch Sequence	<u>Czekanowskia cf. rigida,</u> <u>Cladophlebis virginiensis</u>	
SM853303	SW Nass-off leases; Ripple Creek	Upper Klappan - lower Malloch Sequence	<u>Czekanowskia cf. rigida,</u> <u>Sphenopteris cf. brulensis,</u> <u>Cladophlebis virginiensis, Baiera</u> <u>cf. gracilis, Nilssonia</u> <u>schaumbergensis, Pterophyllum</u> <u>rectangulare</u>	
SM853402	SW Nass-off leases	Lower Rhondda Sequence	<u>Czekanowskia cf. rigida</u>	Minor
SM853404	SW Nass-off leases	Lower Rhondda Sequence	<u>Cladophlebis virginiensis</u>	Minor
SM853407	SW Nass-off leases	Lower Rhondda Sequence	<u>Czekanowskia cf. rigida</u>	
SM851304	Tahtsedle Ck. area, Horse- shoe Creek	Klappan Sequence	<u>Nilssonia tenuicaulis</u>	
SM850501	Knooph Hill; cirque N face	Lower Malloch Sequence	<u>Cladophlebis virginiensis,</u> <u>Czekanowskia cf. rigida,</u> <u>Podozamites cf. lanceolatus,</u> <u>Ginkgo cf. lepida, Pterophyllum</u> <u>rectangulare</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM850514	Knooph Hill - cirque N face	Lower Malloch Sequence	<u>Cladophlebis virginiensis</u> , <u>Czekanowskia cf. rigida</u>	
SM850519	Knooph Hill - cirque N face	Lower Malloch Sequence	<u>Cladophlebis virginiensis</u> , <u>Czekanowskia cf. rigida</u>	
SM850522	Knooph Hill - cirque N face	Lower Malloch Sequence	<u>Nilssonia schaubergensis</u>	
SM850901	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Czekanowskia cf. rigida</u> , <u>Cladophlebis virginiensis</u> , <u>Pityophyllum nordenskiöldii</u>	All abundant
SM850902 SM850903	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Czekanowskia cf. rigida</u> , <u>Cladophlebis virginiensis</u> , <u>Nilssonia schaubergensis</u>	
SM850904	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Czekanowskia cf. rigida</u> , <u>Cladophlebis virginiensis</u> , <u>Pterophyllum rectangulare</u> , <u>Podozamites cf. lanceolatus</u>	
SM850905	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Ginkgo nana</u> , <u>Baiera furcata</u>	
SM851001	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Ginkgo nana</u> , <u>Baiera furcata</u>	
SM851002	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Ginkgo nana</u> , <u>Baiera furcata</u> , <u>Czekanowskia cf. rigida</u>	
SM851003	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Ginkgo nana</u> , <u>Baiera furcata</u> , <u>Czekanowskia cf. rigida</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
SM851004	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Nilssonia canadensis</u> , <u>Czekanowskia</u> <u>cf. rigida</u> , <u>Podozamites</u> <u>cf.</u> <u>lanceolatus</u> , <u>Pterophyllum</u> <u>rectangulare</u>	
SM851005	Broatch Creek	Lower Malloch-upper Klappan Sequence	<u>Ginkgo nana</u> , <u>Baiera</u> <u>cf.</u> <u>furcata</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
JT85A	Lost Ridge - front E slope	Upper Klappan Sequence around M seam	<u>Pityophyllum nordenskioldii</u> , <u>Nilssonia canadensis</u> , <u>Nilssonia</u> <u>nigracollensis</u> , <u>Ginkgo nana</u> , <u>Sphenopteris cf. brulensis</u> , <u>Podozamites cf. lanceolatus</u> , <u>Nilssonia schaubergensis</u> , <u>Nilssonia tenuicaulis</u> , <u>Pterophyllum rectangulare</u>	Occurs with abundant bivalves (unidentified)
JT85001	Lost Ridge	Klappan Sequence around seam N	<u>Cladophlebis virginiensis fisheri</u>	
JT8502 (July 2)	Lost Ridge DDH85003	Klappan Sequence overlying K seam by 10-20m	<u>Pityophyllum nordenskioldii</u> , <u>Nilssonia sp.</u> , <u>Czekanowskia cf.</u> <u>rigida</u> , <u>Ginkgo nana</u> , <u>Sphenopteris</u> <u>cf. brulensis</u>	
JT85B	Lost Ridge Middle-west end	Klappan Sequence just below G seam	<u>Sphenopteris cf. brulensis</u> , <u>Cladophlebis virginiensis</u> , <u>Nilsson-</u> <u>ia canadensis</u> , <u>Pterophyllum rect-</u> <u>angulare</u> , <u>Pityophyllum nord-</u> <u>enskioldii</u>	
JT8507	Lost Ridge near Sc19	Klappan Sequence near J seam	<u>Sphenopteris cf. brulensis</u> , <u>Pterophyllum rectangulare</u>	
JT843605A,C	Mt. Klappan	Klappan Sequence	<u>Nilssonia tenuicaulis</u> , <u>Cladophlebis</u> <u>virginiensis</u>	
JT850511F	Knooph Hill	Klappan Sequence	<u>Nilssonia tenuicaulis</u>	
JT84LRA JT84LRB	Lost Ridge	Klappan Sequence	<u>Nilssonia schaubergensis</u> <u>Nilssonia bronniarti</u>	
JT842501	Lost Ridge	Klappan Sequence	<u>Ginkgo nana</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
JT844004	Lost Ridge	Middle Klappan Sequence	<u>Baiera</u> sp.	
MB85001	Lost Ridge E side	Klappan Sequence between seams K and M	<u>Ginkgo pluripartita</u>	
MB85001	Lost Ridge E side	Klappan Sequence slightly above N seam	<u>Nilsson</u> ia sp.	
BL8401	N of Grizzly Creek	Malloch Sequence	<u>Ctenis borealis</u>	
KJ85013-2	Beirnes Ridge	Middle-lower Malloch Sequence	<u>Nilsson</u> ia <u>nigracollensis</u> , <u>Ctenis borealis</u> , <u>Czekanowskia</u> <u>cf. rigida</u> , <u>Nilsson</u> ia <u>schaumbergensis</u> , <u>Cladophlebis</u> <u>virginiensis fisheri</u> , <u>Baiera</u> <u>turcata</u> , <u>Sphenopteris</u> cf. <u>brulensis</u>	
KJ85026-1	Caribou Ridge	Middle-upper Malloch Sequence	<u>Czekanowskia</u> cf. <u>rigida</u> , <u>Podozamites</u> <u>cf. lanceolatus</u> , <u>Cladophlebis</u> <u>virginiensis martiniana</u> , <u>Cladophlebis virginiensis acuta</u> , <u>Pityophyllum nordenskioldii</u>	
KJ85027-1	Ridge W of Nass Lake	Middle-upper Malloch Sequence	<u>Czekanowskia</u> cf. <u>rigida</u> , <u>Pityophyllum nordenskioldii</u> , <u>Cladophlebis virginiensis acuta</u> , <u>Ginkgo nana</u> , <u>Cladophlebis</u> <u>virginiensis martiniana</u> , <u>*Nilsson</u> ia <u>canadensis</u>	*Very large
KJ841403	Knoph Hill	Lower Malloch Sequence	<u>Cladophlebis virginiensis</u> , <u>Sphenopteris brulensis</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
KJ85028-1 (OTC85017)	Rhondda Ridge SW Nass-off leases	Uppermost Malloch Sequence - lower Rhondda	<u>Nilssonia canadensis</u> , <u>Pityophyllum nordenskioldii</u> , <u>**Podozamites cf. Tanceolatus</u> ; <u>*Czekanowskia cf. rigida</u> , <u>Equisetites Iyelli</u> stem, <u>Cladophlebis virginensis martiniana</u>	*Very abundant **increases downsection
KJ85025-1	Maritime Mountain	Malloch Sequence	<u>Czekanowskia cf. rigida</u>	
KJ85025-3	Maritime Mountain	Malloch Sequence	<u>Cladophlebis virginensis</u>	
KJ85014-1	Caribou Ridge	Lower Malloch Sequence Close to Klappan Contact	<u>Sphenopteris cf. brulensis</u>	
KJ85007-2	Spatsizi Park	Spatsizi-Klappan Boundary Area	<u>Nilssonia sp.</u> , <u>Pityophyllum nordenskioldii</u>	
KJ85011-3 (OTC85010)	Just W of Spatsizi River	Spatsizi-Klappan Boundary Area	<u>Pityophyllum nordenskioldii</u> , <u>Nilssonia nigracollensis</u> , <u>Ginkgo nana</u>	
KJ85009-1	Spatsizi Park; ridge E of Butler Creek	Spatsizi-Klappan Boundary Area	<u>Pterophyllum rectangulare</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
KJ85014-1	Caribou Ridge	Mid-lower Malloch Sequence	<u>Czekanowskia cf. rigida</u>	
KJT2404-G	E end of Lost Ridge	Klappan Sequence	<u>Coniopteri (?)</u> , <u>Ptilophyllum articum (?)</u>	
KJ85029-1	Ski Ridge SW Nass	Middle-lower Malloch Sequence	<u>Czekanowskia cf. rigida</u>	
KJ85029-2	Ski Ridge SW Nass	Middle-lower Malloch Sequence	<u>Czekanowskia cf. rigida</u>	
KJ85029-3	Ski Ridge SW Nass	Middle-lower Malloch Sequence	<u>Czekanowskia cf. rigida</u> , <u>Podozamites cf. lanceolatus</u> , <u>Cladophlebis virginienensis</u>	
KJ85029-4	Ski Ridge SW Nass	Middle-lower Malloch Sequence	<u>Czekanowskia cf. rigida</u> , <u>Pityophyllum nrdenskioidii</u> <u>Cladophlebis virginienensis</u>	
KJ85029-5	Ski Ridge SW Nass	Middle-lower Malloch Sequence	<u>Ginkgo nana</u>	
KJ85029-6	Ski Ridge SW Ridge	Middle-lower Malloch Sequence	<u>Podozamites cf. lanceolatus</u>	
KJ85026-3	E Nass-W of Horseshoe Ridge	Malloch Sequence	<u>Czekanowskia cf. rigida</u> , <u>Podozamites cf. lanceolatus</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
KJ85026-4	E Nass-W of Horseshoe Ridge	Malloch Sequence	<u>Cladophlebis virginiensis</u> <u>martiniana</u>	
KJ85062-5	E Nass-W of Horseshoe Ridge	Malloch Sequence	<u>Cladophlebis virginiensis acuta</u> , <u>Pityophyllum nordenskiöldii</u> , <u>Czekanowskia cf. rigida</u> , <u>Pterophyllum rectangulare</u>	
KJ85027-5	W Nass, out- side of leases	Malloch Sequence	<u>Czekanowskia cf. rigida</u> , <u>Cladophlebis virginiensis</u> , <u>Nilssonia canadensis</u> , <u>Pityophyllum</u> <u>nordenskiöldii</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
LS850210-11	S Nass Area outside of leases	Middle (?) Malloch Sequence	<u>Cladophlebis virginiensis</u> <u>martiniana, Czekanowskia cf.</u> <u>rigida, Podozamites cf. lanceolatus</u>	Minor
LS840110	SE Nass Area just W of Nass Lake, outside of lease bound- ary	Middle Malloch Sequence	<u>Czekanowskia cf. rigida, Nilsson</u> <u>brongniarti, Podozamites cf.</u> <u>lanceolatus, Pityophyllum cf.</u> <u>nordenskioldii, Pterophyllum</u> <u>rectangulare, Cladophlebis</u> <u>virginiensis fisheri, Cladophlebis</u> <u>virginiensis acuta, Nilsson</u> <u>tenuicaulis</u>	
LS840107	S Nass Area just S of lease bound- ary	Middle Malloch Sequence	<u>Cladophlebis virginiensis, Ginkgo</u> <u>nana</u>	
LS850210	S Nass Area just S of lease bound- ary	Malloch Sequence	<u>Cladophlebis virginiensis</u> <u>martiniana</u>	
LS850211	S Nass Area just S of lease bound- ary	Malloch Sequence	<u>Czekanowskia cf. rigida,</u> <u>Podozamites cf. lanceolatus</u>	
BB850502	W Nass, out- side of leases	Malloch Sequence	<u>Czekanowskia cf. rigida</u>	
BB850504	W Nass, out- side of leases	Malloch Sequence	<u>Podozamites cf. lanceolatus,</u> <u>Czekanowskia cf. rigida</u>	
GD8413B12/13	Ellis Ridge	Malloch Sequence	<u>Cladophlebis virginiensis fisheri,</u> <u>Czekanowskia cf. rigida</u>	
GD840202	Spatsizi Park	Spatsizi-Klappan Boundary Zone	<u>Cladophlebis virginiensis</u> <u>martiniana</u>	
D842201-09	Horsehoe Ridge Area	Malloch Sequence	<u>Cladophlebis virginiensis</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
GD841914	Skeena, just W of lease boundary	Rhondda Sequence	<u>Czekanowskia cf. rigida</u>	
GD841919	Skeena, just W of lease boundary	Rhondda Sequence	<u>Nilssonina nigracollensis</u> , <u>Cladophlebis virginensis</u> <u>Pityophyllum nordenskioldii</u>	
GD841925	Skeena, just W of lease boundary	Rhondda Sequence	<u>Cladophlebis virginensis</u>	
GD841007	Nass	Klappan Sequence	<u>Cladophlebis virginensis</u>	
GD841615	Nass	Klappan Sequence	<u>Ginkgo nana</u>	
GD840712	Close to Ellis Ridge	Malloch Sequence	<u>Pityophyllum nordenskioldii</u>	
GD8413/12A	Ellis Ridge Area	Malloch Sequence	<u>Ginkgo nana</u>	
GD842309	Spatsizi Park	Spatsizi-Klappan boundary zone	<u>Ginkgo nana</u>	
ES840101	W Nass-Klappan River Area	Klappan Sequence	<u>Nilssonina nigracollensis</u>	
ES840214	W Nass-just off leases	Malloch Sequence	<u>Czekanowskia cf. rigida</u>	
ES840215	W Nass-just off leases	Malloch Sequence	<u>Ctenis borealis</u>	
ES840201	W Nass-just off leases	Malloch Sequence	<u>Cladophlebis virginensis fisheri</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
ES840301	Ridge E of Nass Lake	Upper Klappan-close to Malloch boundary	<u>Nilssonia nigracollensis</u>	
ES840403	Nass	Klappan Sequence	<u>Cladophlebis virginiensis</u>	
ES841110 ES841102	N. Nass, just N of new leases	Klappan (?) Sequence	<u>Pityophyllum nordenskioldii</u> <u>Baiera furcata, Ginkgo nana</u>	
ES841701 ES841702	Horseshoe Ridge-E Nass	Middle Malloch Sequence	<u>Ginkgo nana</u> <u>Nilssonia canadensis, Ginkgo nana</u> <u>Nilssonia nigracollensis</u>	
ES841703 ES841704 ES841706			<u>Czekanowskia cf. rigida</u> <u>Nilssonia nigracollensis</u> <u>Nilssonia nigracollensis</u>	
ES841601 ES841602 ES841603	W Nass, just S of lease boundary	Malloch Sequence	<u>Cladophlebis virginiensis</u> <u>martiniana, Ginkgo nana</u> <u>Cladophlebis virginiensis acuta</u> <u>Cladophlebis virginiensis acuta</u>	
ES842103	E Nass, N of Horseshoe Ridge	Klappan Sequence	<u>Ginkgo nana</u>	
ES842501	E Nass, N of Horseshoe Ridge	Klappan Sequence	<u>Cladophlebis virginiensis fisheri,</u> <u>Pterophyllum rectangulare</u>	
ES842701	E Nass, N of Horseshoe Ridge	Klappan Sequence	<u>Nilssonia nigracollensis</u>	

SPECIMEN NUMBER	LOCATION	STRATIGRAPHIC POSITION	IDENTIFICATION (MacLeod)	COMMENTS
ES84270203	E Nass, N of Horseshoe Ridge	Klappan Sequence	<u>Nilssonia brongniarti,</u> <u>Pterophyllum rectangulare</u>	
SF840214	Horseshoe Ridge	Malloch Sequence	<u>Pterophyllum rectangulare,</u> <u>Baiera cf. furcata, Czekanowskia</u> <u>cf. rigida</u>	
SF840215	Nass Area		<u>Ctenis borealis</u>	
SR2	Mt. Klappan	Malloch Sequence	<u>Nilssonia canadensis, Pitophyllum</u> <u>nordenskioldii, Pterophyllum</u> <u>rectangulare</u>	
SF8403	Mt. Klappan	Malloch Sequence	<u>Ctenis borealis</u>	

APPENDIX E

RESOURCE DATA AND CALCULATIONS

Replaced older version
of calculations

LDST-FOX AREA : RESOURCE CALCULATIONS December 1985.

MEAI250

SECTION : 1250 N
RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D	85027	1.51	1.68	290	250	183918
N	85027	2.17	1.68	305	250	277977
M/N			1.68			0
Mu	85027	1.85	1.68	310	250	240870
M1	85027	1.2	1.68	310	250	156240
L/M			1.68			0
L	85027	1.62	1.68	315	250	214326
K/L	85027	3.22	1.68	320	250	432768
K	85027	1.08	1.68	320	250	145152
I	85027	5.05	1.68	315	250	668115
H/I			1.68			0
H	85027	2.25	1.68	310	250	292950
PH			1.68			0
Gu			1.68			0
G1			1.68			0
F/G			1.68			0
F			1.68			0
E			1.68			0
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

2612316

SECTION : 1500 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
J			1.68			0
I	85026	5.67	1.68	240	250	571536
H/I			1.68			0
H	85026	3.43	1.68	265	250	381759
PH			1.68			0
Gu			1.68			0
G1			1.68			0
F/G			1.68			0
F			1.68			0
E			1.68			0
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

953295

SECTION : 1750 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
I	85028	4.74	1.68	90	125	89586
I	85025	4.42	1.68	90	125	83538
I	85022	4.69	1.68	250	250	492450
H/I			1.68			0
H	85028	4.08	1.68	250	250	428400
H	85025	3.72	1.68	80	125	62496
H	85022	3.66	1.68	260	250	399672
PH			1.68			0
Gu			1.68			0
G1			1.68			0
F/G			1.68			0
F			1.68			0
E			1.68			0
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 1556142

SECTION : 2000 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
O			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
J			1.68			0
I	85025	4.42	1.68	150	250	278460
I	85022	4.69	1.68	150	250	295470
H/I			1.68			0
H	85025	3.72	1.68	180	250	281232
H	85024	4.62	1.68	145	250	281358
Su			1.68			0
G1			1.68			0
F/G			1.68			0
F			1.68			0
E			1.68			0
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

1136520

SECTION : 2250 N
 RESOURCE TYPE: MEASURED

SEAM NAME	DIAMOND DRILL HDLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m3)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O	85005	1	1.68	140	175	41160
O	85010	4.6	1.68	310	175	419244
N	85010	1.81	1.68	230	175	122392.2
M/N						0
Mu						0
M1						0
M	85023	15.48	1.68	315	175	1433602.8
M	85005	2.93	1.68	125	50	30765
M	85010	3.96	1.68	230	175	267775.2
L/M						0
L	85023	4.57	1.68	450	175	604611
L	85005	0.61	1.68	125	50	6405
K/L	85011	0.66	1.68	140	60	9313.92
K	85023	4.47	1.68	590	175	775366.2
K	85005	3.1	1.68	175	50	45570
K	85011	3.47	1.68	120	50	34977.6
J	84006	3.56	1.68	610	175	638450.4
I	85024	6.45	1.68	100	175	189630
I	84006	5.04	1.68	525	175	777924
I	85011	1.75	1.68	150	175	77175
I	84007	5.43	1.68	215	175	343230.3
H/I						0
H	85024	4.62	1.68	125	175	169785
H	84006	5.8	1.68	550	175	937860
H	84007	3.98	1.68	220	175	257426.4
PH	85007	2.98	1.68	215	175	188365.8
GI	85008	0.67	1.68	320	175	63033.6
GI	84007	0.89	1.68	220	175	57565.2
F/G						0
F	85008	0.66	1.68	50	175	9702
F	84007	1.07	1.68	220	175	69207.6
E	84007	1	1.68	245	175	72030
D						0
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 7642568.22

SECTION : 2350 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O	85005	1	1.68	240	125	50400
O	85010	4.6	1.68	400	125	386400
N	85010	1.81	1.68	365	125	138736.5
M/N						0
Mu						0
M1						0
M	85023	15.48	1.68	450	125	1462860
M	85005	2.93	1.68	300	125	184590
M	85010	3.96	1.68	300	125	249480
L/M						0
L	85023	4.57	1.68	540	125	518238
L	85005	0.61	1.68	300	125	38430
K/L	85011	0.66	1.68	310	125	42966
K	84006	2.88	1.68	90	125	54432
K	85023	4.47	1.68	580	125	544446
K	85005	3.1	1.68	275	125	179025
K	85011	3.47	1.68	220	125	160314
J	84006	3.56	1.68	360	50	107654.4
I	85009	4.9	1.68	340	75	209916
I	84006	5.04	1.68	115	50	48686.4
I	85011	1.75	1.68	315	125	115762.5
I	84007	5.43	1.68	270	125	307881
H/I						0
H	84006	5.8	1.68	250	50	121800
H	84007	3.98	1.68	310	125	259098
H						0
PH	84007	2.98	1.68	310	125	193998
Su						0
G1	85008	0.67	1.68	230	125	32361
G1	84007	0.89	1.68	310	125	57939
F/S						0
F	85008	0.66	1.68	200	125	27720
F	84007	0.78	1.68	157	125	25716.6
F	84007	1.07	1.68	310	125	69657
E	84007	1	1.68	310	125	65100
D						0
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

5653607.4

LOST-FOX AREA : RESOURCE CALCULATIONS December 1985.

MEA2500

SECTION : 2500 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
O	85005	1	1.68	160	150	40320
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
M	85005	2.93	1.68	200	150	147672
L/M			1.68			0
L	85009	4.46	1.68	300	150	337176
L	85005	0.61	1.68	200	150	30744
K/L	85011	0.66	1.68	195	125	27027
K	85009	3.27	1.68	480	150	395539.2
K	85005	3.1	1.68	190	150	148428
K	85011	3.47	1.68	90	150	78699.6
J			1.68			0
I	85009	4.87	1.68	625	150	767025
I	85017	5.37	1.68	220	150	297712.8
I	85011	1.75	1.68	230	150	101430
I	84007	5.43	1.68	45	75	30788.1
H/I			1.68			0
H	85006	2.76	1.68	250	150	173880
H	85017	4.67	1.68	200	150	235368
G	85006	3.49	1.68	280	150	246254.4
G1	85017	0.97	1.68	170	150	41554.8
F/G			1.68			0
F	85006	3.1	1.68	695	150	542934
F	85017	1.93	1.68	180	150	87544.8
E	85006	0.91	1.68	240	150	55036.8
E	85017	2.34	1.68	175	150	103194
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

3888328.5

SECTION : 2650 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O						0
N	85003	1.58	1.68	405	125	134379
M/N						0
M	85003	5.3	1.68	620	125	690060
M1						0
L/M						0
K/L						0
K	82005	5.16	1.68	410	125	444276
K	84008	3.93	1.68	280	125	231094
J						0
I	85033	5.48	1.68	290	125	333732
I	82005	4.98	1.68	310	125	324198
I	84008	3.86	1.68	290	125	235074
I	85017	5.37	1.68	285	125	321394.5
H/I	84008	0.61	1.68	80	125	10248
H	85006	2.76	1.68	120	175	97372.8
H	84006	5.8	1.68	320	125	389760
H	85017	4.67	1.68	290	125	284403
PH	84008	3.28	1.68	275	125	189420
G	85006	3.49	1.68	310	125	227199
G1	85017	0.97	1.68	295	125	60091.5
F/G						0
F	85006	3.1	1.68	305	75	119133
F	85017	1.93	1.68	295	125	119563.5
E	85006	0.91	1.68	60	75	6879.6
E	85017	2.34	1.68	300	125	147420
D						0
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 4365687.9

SECTION : 2750 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O						0
N	85003	1.58	1.68	350	175	162582
M/N						0
M	82005	2.24	1.68	105	175	69148.8
M	85003	5.3	1.68	220	175	342804
M1						0
L/M						0
K/L						0
K	82005	5.16	1.68	610	175	925394.4
K	84008	3.93	1.68	300	175	346626
J						0
I	85017	5.37	1.68	125	175	197347.5
I	85004	3.7	1.68	150	175	163170
I	85033	5.48	1.68	400	175	644448
I	82005	4.98	1.68	370	175	541724.4
I	84005	3.86	1.68	325	175	368823
H/I	84008	0.61	1.68	130	175	23314.2
H	85004	3.96	1.68	260	175	302702.4
H	84008	6.41	1.68	360	175	678434.4
H	85017	4.67	1.68	310	50	121606.8
PH	84008	3.28	1.68	330	175	318225.6
G1	85017	0.97	1.68	120	50	9777.6
G1	85019	0.52	1.68	260	175	39748.8
F/G						0
F	85004	2.35	1.68	505	175	348904.5
F	85017	1.93	1.68	120	50	19454.4
F	85019	4.21	1.68	270	175	334189.8
E	85004	2.23	1.68	405	175	265526.1
E	85017	2.34	1.68	120	50	23587.2
C	85019	0.51	1.68	250	175	37485
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

6285024.9

SECTION : 3000 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O						0
N						0
M/N						0
Mu						0
M1						0
L/M						0
L	85012	1.37	1.68	400	250	230160
K/L	85012	1.49	1.68	380	250	237804
K	85013	0.98	1.68	80	250	32928
J						0
I	83001	5.51	1.68	130	250	300846
I	85031	4.54	1.68	60	250	114408
I	85030	3.98	1.68	275	250	459690
I	85032	5.47	1.68	130	250	298662
I	85012	3.21	1.68	325	250	438165
I	85013	6.16	1.68	255	250	659736
i	85001	4.38	1.68	190	250	349524
H/I						0
H	83001	4.54	1.68	490	250	934332
H	85013	4.37	1.68	250	250	458850
H	85001	2.15	1.68	190	250	171570
PH						0
Gu	83001	3.93	1.68	740	250	1221444
G1	83001	2.25	1.68	720	250	680400
G1	85013	0.65	1.68	290	250	79170
G	85001	0.94	1.68	190	250	75012
F/G						0
F	83001	4.79	1.68	575	250	1156785
F	85013	4.21	1.68	290	250	512778
E	85020	1.91	1.68	425	250	340935
E	83001	1.32	1.68	500	250	277200
D	85020	4.74	1.68	460	250	915768
C	85020	1.19	1.68	350	250	174930
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

10121097

SECTION : 3250 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
O			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
J			1.68			0
I	85016	5.55	1.68	330	175	538461
H/I			1.68			0
H	85016	6.75	1.68	325	175	644962.5
PH			1.68			0
Gu	85015	1.3	1.68	345	175	131859
G	85016	0.79	1.68	320	175	74323.2
F/G			1.68			0
F	85015	2.73	1.68	570	175	457493.4
F	85016	2.13	1.68	340	175	212914.8
E	85016	2.22	1.68	340	175	221911.2
D	85016	2.41	1.68	340	175	240903.6
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

2522828.7

SECTION : 3350 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O						0
N						0
M/N						0
Mu						0
M1						0
L/M						0
L						0
K/L						0
X						0
J						0
I	85014	5.46	1.68	100	75	68796
I	85016	5.55	1.68	250	125	291375
H/I						0
H						0
PH						0
Gu	85015	1.3	1.68	485	125	132405
G	85016	0.79	1.68	240	125	39816
F/G						0
F	85015	2.73	1.68	560	125	321048
F	85016	2.13	1.68	235	125	105115.5
E	85015	0.95	1.68	135	125	26932.5
E	85016	2.22	1.68	230	125	107226
D	85016	2.41	1.68	240	125	121464
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 1214178

SECTION : 3500 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O						0
N						0
M/N						0
Mu						0
MI						0
L/M						0
L						0
K/L						0
X						0
J						0
I	85014	5.46	1.68	325	200	596232
H/I						0
H	85014	2.09	1.68	320	200	224716.9
PH						0
Gu						0
GI						0
F/G						0
F	85015	2.73	1.68	340	200	311875.2
F	85014	2.71	1.68	315	200	286826.4
E						0
C						0
B						0
-----						seams >=0.5m
TOTAL TONNES FOR THIS SECTION :						1419650.4

SECTION : 3750 N
 RESOURCE TYPE : MEASURED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
D						0
N						0
M/N						0
Mu						0
M1						0
L/M						0
L						0
K/L						0
K						0
J						0
I	85018	2.62	1.68	305	250	335622
I	85021	1.61	1.68	175	250	118335
H/I						0
H	85018	3.63	1.68	240	250	365904
H	85021	5.55	1.68	290	250	675990
PH						0
Bu						0
G1						0
F/G						0
F	85018	6.02	1.68	240	250	606816
F	85021	3.43	1.68	305	250	439383
E	85021	1.61	1.68	305	250	231861
D	85018	1.89	1.68	240	250	190512
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

2964423

SECTION : 1250 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O	85027	1.51	1.68	150	250	95130
N	85027	2.17	1.68	460	250	419244
M/N						0
Mu	85027	1.35	1.68	190	250	147670
Mi	85027	1.2	1.68	190	250	95760
L/M						0
L	85027	1.62	1.68	175	250	91854
K/L						0
K	85027	1.08	1.68	700	250	136080
J						0
I	85027	5.03	1.68	725	250	686595
H/I						0
H	85027	2.25	1.68	700	250	302400
FH						0
Gu						0
G1						0
F/G						0
F						0
E						0
D						0
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 1974693

SECTION : 1500 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0.
D						0
N	85027	2.17	1.68	155	250	141257
M/N						0
Mu	85027	1.95	1.68	200	250	155400
M	85027	1.2	1.68	200	250	100800
L/M						0
L	85027	1.62	1.68	230	250	156492
K/L						0
K	85027	1.08	1.68	270	250	122472
J						0
I	85027	5.03	1.68	90	250	190134
I	85026	5.68	1.68	360	250	858816
H/I						0
H	85026	3.43	1.68	360	250	518616
PH						0
Gu						0
G1						0
F/G						0
F						0
E						0
D						0
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 2243997

SECTION : 1750 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
O			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
J			1.68			0
I	85028	4.74	1.68	360	250	716628
I	85025	4.42	1.68	240	250	445536
I	85022	4.69	1.68	90	250	177282
I	85026	5.68	1.68	65	250	155064
H/I			1.68			0
H	85028	4.08	1.68	350	250	599760
H	85025	3.72	1.68	145	250	226548
H	85022	3.66	1.68	90	250	138348
H	85026	3.43	1.68	270	250	388962
PH			1.68			0
Gu			1.68			0
G1			1.68			0
F/G			1.68			0
F			1.68			0
E			1.68			0
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 2848188

SECTION : 2000 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L	85023	4.57	1.68	130	125	124761
K/L			1.68			0
K	84006	2.88	1.68	55	250	66528
K	85023	4.47	1.68	390	250	732126
J			1.68			0
I	85028	4.74	1.68	70	250	139356
I	85025	4.42	1.68	100	250	185640
I	85024	6.45	1.68	75	250	203175
I	85022	4.69	1.68	100	250	196980
I	84006	5.04	1.68	560	250	1185408
H/I			1.68			0
H	85028	4.08	1.68	150	250	257040
H	85025	3.72	1.68	95	250	148428
H	85024	4.62	1.68	55	250	106722
H	85022	3.66	1.68	130	250	199836
H	84006	5.8	1.68	770	250	1875720
PH			1.68			0
Gu			1.68			0
G1			1.68			0
F/G			1.68			0
E			1.68			0
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

5421780

SECTION : 2250 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D	85005	1	1.68	65	125	13650
D	85010	4.6	1.68	125	125	120750
N	85010	1.81	1.68	195	175	103767.3
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
M	85023	15.48	1.68	10	175	45511.2
M	85005	2.93	1.68	75	175	64606.5
M	85010	3.96	1.68	260	175	302702.4
L/M			1.68			0
L	85023	4.57	1.68	5	175	6717.9
L	85005	0.61	1.68	270	175	48421.8
K/L			1.68			0
K	85005	3.1	1.68	225	175	205065
K	85011	3.47	1.68	200	175	204036
J			1.68			0
I	85024	6.45	1.68	180	175	341334
I	84006	5.04	1.68	115	175	170402.4
I	85011	1.75	1.68	280	175	144060
I	84007	5.43	1.68	65	175	103767.3
H/I			1.68			0
H	85024	4.62	1.68	275	175	373527
H	84007	3.98	1.68	155	175	181368.6
PH	84007	2.98	1.68	405	175	354828.6
Gu			1.68			0
G1	85008	0.67	1.68	150	175	29547
G1	84007	0.89	1.68	390	175	102047.4
F/G			1.68			0
F	85008	0.66	1.68	155	175	30076.2
F	84007	1.07	1.68	350	175	110103
E	84007	1	1.68	450	175	132300
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 3186589.6

SECTION : 2350 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES BEAMS >=0.5m
P			1.68			0
D	85005	1	1.68	40	125	8400
N	85010	1.84	1.68	110	125	42504
M/N			1.68			0
Mu			1.68			0
M	85010	3.96	1.68	100	125	83160
L/M			1.68			0
L	85005	0.61	1.68	175	125	22417.5
K/L			1.68			0
K	85005	3.1	1.68	175	125	113925
K	85011	3.47	1.68	180	125	131166
J			1.68			0
I	84006	5.04	1.68	200	125	211680
I	85017	5.37	1.68	90	125	101493
I	85011	1.75	1.68	170	125	62475
I	84007	5.43	1.68	65	125	74119.5
H/I			1.68			0
H	84006	2.76	1.68	315	125	132574
H	85017	4.67	1.68	100	125	98070
H	84007	3.98	1.68	40	125	33432
PH	84007	2.98	1.68	320	125	200256
G	85006	3.49	1.68	220	125	161238
G1	85008	0.67	1.68	20	125	2814
G1	85017	0.97	1.68	180	125	36666
G1	84007	0.89	1.68	315	125	58873.5
F/G			1.68			0
F	85006	3.1	1.68	215	125	139965
F	85008	0.66	1.68	30	125	4158
F	85017	1.93	1.68	140	125	56742
F	84007	1.07	1.68	310	125	69657
E	85006	0.91	1.68	270	125	51597
E	85017	2.34	1.68	110	125	54054
E	84007	1	1.68	555	125	116550
D			1.68			0
C			1.68			0
B			1.68			0

 beams >=0.5m

TOTAL TONNES FOR THIS SECTION : 2117986.5

SECTION : 2500 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D	85010	4.6	1.68	245	150	284004
N	85003	1.58	1.68	25	150	9954
N	85010	1.84	1.68	305	150	141422.4
M	85003	5.3	1.68	110	150	146916
M	85005	2.93	1.68	170	150	125521.2
M	85010	3.96	1.68	375	150	374220
L/M			1.68			0
L	85009	4.46	1.68	200	150	224784
L	85005	0.61	1.68	280	150	43041.6
K/L			1.68			0
K	85009	3.27	1.68	220	150	181288.8
K	85005	3.1	1.68	210	150	184052
K	84008	3.93	1.68	15	75	7427.7
K	85011	3.47	1.68	210	150	183632.4
J			1.68			0
I	85009	4.9	1.68	20	150	24696
I	84008	3.86	1.68	255	150	248043.6
I	85017	5.37	1.68	155	150	209752.2
I	85011	1.75	1.68	130	150	57330
H/I			1.68			0
H	85006	2.76	1.68	490	150	340804.8
H	84006	5.8	1.68	40	150	58464
H	84008	6.41	1.68	250	150	403830
H	85017	4.67	1.68	360	150	423662.4
H	84007	3.98	1.68	110	150	110325.6
PH	84008	3.28	1.68	250	150	206640
PH	84007	2.98	1.68	360	150	270345.6
G	85006	3.49	1.68	740	150	650815.2
GU			1.68			0
G1	85017	0.97	1.68	395	150	96553.8
G1	84007	0.89	1.68	525	150	117747
F/G			1.68			0
F	85006	3.1	1.68	180	150	140616
F	85017	1.93	1.68	295	150	143476.2
F	84007	1.07	1.68	500	150	134820
E	85017	2.34	1.68	195	150	114987.6
E	84007	1	1.68	725	150	182700
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 5821874.1

SECTION : 2650 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
Q	85010	4.6	1.58	200	125	193200
N	85003	1.58	1.58	140	125	45452
Y/N						0
M	85003	5.3	1.58	140	125	155820
M	85005	2.93	1.58	75	125	46147.5
M1						0
L/M						0
K/L						0
K	82005	5.16	1.65	380	125	411768
K	84008	3.93	1.58	345	125	284728.5
X	85011	3.47	1.68	50	125	36435
J						0
I	85004	3.7	1.68	80	125	62150
I	85033	5.48	1.58	40	125	46032
I	82005	4.98	1.68	90	125	94122
I	84008	3.86	1.68	195	125	158067
I	85017	5.37	1.58	150	125	169155
I	85011	1.75	1.58	120	125	44100
H/I						0
H	85006	2.76	1.68	805	75	279946.8
H	84008	6.41	1.68	465	125	625936.5
H	85017	4.67	1.68	145	125	142201.5
H	85001	2.15	1.68	340	125	153510
PH	84008	3.28	1.68	165	125	113652
G	85006	3.49	1.68	515	125	377443.5
G	85001	0.94	1.58	175	125	34545
G1	85017	0.97	1.58	70	125	14259
G1	85019	0.52	1.68	265	125	28938
F/6						0
F	85006	3.1	1.58	290	125	188790
F	85013	4.21	1.68	135	125	119353.5
F	85017	1.93	1.58	175	125	70927.5
F	85019	4.21	1.68	305	125	296173.5
E	85006	0.91	1.58	145	125	27709.5
E	85017	2.34	1.58	205	125	100737
D						0
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 4322310.3

SECTION : 2750 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D			1.68			0
N	85003	1.58	1.68	75	175	34839
M/N			1.68			0
M	85003	5.3	1.68	170	175	244894
M1			1.68			0
L/M			1.68			0
L	85012	1.37	1.68	100	175	40278
K/L			1.68			0
K	82005	5.16	1.68	90	175	136533.6
K	84008	3.93	1.68	150	175	173313
J			1.68			0
I	82005	4.98	1.68	75	175	109809
I	85012	3.21	1.68	115	175	108530.1
I	84008	3.86	1.68	120	175	136180.8
I	85017	5.37	1.68	180	175	284180.4
H/I			1.68			0
H	85004	3.96	1.68	455	175	529729.2
H	84008	6.41	1.68	190	175	358062.6
H	85017	4.67	1.68	265	175	363839.7
H	85001	2.15	1.68	370	175	233877
PH	84008	2.28	1.68	200	175	134064
G	85001	0.94	1.68	245	175	67708.2
G1	85017	0.97	1.68	100	175	28518
G1	85019	0.52	1.68	25	175	3822
F/G			1.68			0
F	85004	2.35	1.68	245	175	169270.5
F	85013	4.21	1.68	385	175	476529.9
F	85017	1.93	1.68	170	175	96461.4
F	85019	4.21	1.68	100	175	123774
E	85020	1.91	1.68	340	175	190923.6
E	85004	2.23	1.68	215	175	140958.3
E	85017	2.34	1.68	250	175	171990
D	85020	4.74	1.68	390	175	543488.4
C	85020	1.19	1.68	380	175	132946.8
C	85019	0.51	1.68	350	175	52479
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

5107000.5

SECTION : 3000 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O						0
N						0
M/N						0
M	82005	2.24	1.68	30	250	28224
MI						0
L/M						0
L	85012	1.77	1.68	50	250	29770
K/L						0
K	82005	5.16	1.68	270	250	585144
K	85013	0.98	1.68	15	250	6174
I	85030	3.98	1.68	95	250	158802
I	85032	5.47	1.68	5	250	11487
I	82005	4.98	1.68	15	250	31374
I	85012	3.21	1.68	115	250	155043
I	85013	6.16	1.68	55	250	142296
I	85001	4.38	1.68	160	250	294336
H/I						0
H	83001	4.54	1.68	310	250	591106
H	85004	3.96	1.68	165	250	274428
H	85016	6.75	1.68	170	250	481950
H	85013	4.37	1.68	310	250	568974
H	85001	2.15	1.68	270	250	243810
PH						0
G	85016	0.79	1.68	205	250	68019
G	85001	0.94	1.68	155	250	61194
Gu	83001	3.93	1.68	280	250	462168
GI	83001	2.25	1.68	280	250	264600
GI	85013	0.65	1.68	285	250	77805
GI	85019	0.52	1.68	235	250	51324
F	83001	4.79	1.68	25	250	50295
F	85004	2.35	1.68	35	250	34545
F	85016	2.13	1.68	180	250	161028
F	85013	4.21	1.68	290	250	512778
F	85019	4.21	1.68	245	250	433209
E	85020	1.91	1.68	180	250	144396
E	83001	1.32	1.68	20	250	11088
E	85016	2.22	1.68	275	250	256410
D	85020	4.74	1.68	530	250	1055124
D	85016	2.41	1.68	270	250	273294
C	85020	1.19	1.68	530	250	264894
C	85019	0.51	1.68	335	250	71757
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

7855848

SECTION : 3250 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
O			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L	85012	1.37	1.68	20	125	5754
K/L			1.68			0
K	85016	1.74	1.68	55	175	28135.8
J			1.68			0
I	85031	4.54	1.68	450	175	600642
I	85014	5.46	1.68	140	175	224733.6
I	85016	5.55	1.68	195	175	318181.5
H/I			1.68			0
H	83001	4.54	1.68	360	175	480513.6
H	85014	2.09	1.68	115	175	70662.9
H	85016	6.75	1.68	255	175	506047.5
H	85001	2.15	1.68	100	175	63210
PH			1.68			0
G	85015	1.3	1.68	410	175	156702
G1		0.79	1.68	330	175	76645.8
F/G			1.68			0
F	85015	2.73	1.68	75	175	60196.5
F	85014	2.71	1.68	110	175	87641.4
F	85016	2.13	1.68	270	175	169079.4
E	85015	0.95	1.68	165	175	46084.5
E	85016	2.22	1.68	335	175	218647.8
D	85020	4.74	1.68	100	175	139356
D	85016	2.41	1.68	350	175	247989
C	85020	1.19	1.68	80	175	27988.8
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 3528212.1

SECTION : 3350 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
Q			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
J			1.68			0
I	85014	5.46	1.68	500	125	573300
I	85016	5.55	1.68	75	125	87412.5
H/I			1.68			0
H	85014	2.09	1.68	250	125	109725
H	85016	6.75	1.68	85	125	120487.5
PH			1.68			0
Gu	85015	1.3	1.68	160	125	43680
G	85016	0.79	1.68	350	125	58065
F/G			1.68			0
F	85015	2.73	1.68	80	125	45864
F	85014	2.71	1.68	275	125	156502.5
F	85016	2.13	1.68	200	125	89460
E	85015	0.95	1.68	155	125	30922.5
E	85016	2.22	1.68	245	125	114219
D	85016	2.41	1.68	350	125	177135
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

1606773

SECTION : 3500 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
J			1.68			0
I	85014	5.46	1.68	350	200	642096
I	85021	1.61	1.68	100	200	54096
H/I			1.68			0
H	85014	2.09	1.68	480	200	337075.2
H	85021	5.55	1.68	140	200	261072
PH			1.68			0
Gu	85015	1.3	1.68	445	200	194376
G1			1.68			0
F/6			1.68			0
F	85015	2.73	1.68	180	200	165110.4
F	85014	2.71	1.68	165	200	150242.4
F	85021	3.43	1.68	220	200	253545.6
E	85015	0.95	1.68	135	200	43092
E	85021	1.81	1.68	300	200	182448
D	85018	1.89	1.68	490	200	311169.6
D	85016	2.41	1.68	220	200	178147.2
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

2772470.4

SECTION : 3750 N
 RESOURCE TYPE : INDICATED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
O			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
MI			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
J			1.68			0
I	85018	2.61	1.68	35	250	38367
I	85021	1.61	1.68	10	250	6762
H/I			1.68			0
H	85018	3.63	1.68	300	250	457380
H	85021	5.55	1.68	50	250	116550
PH			1.68			0
Gu			1.68			0
GI			1.68			0
F/G			1.68			0
F	85018	6.02	1.68	260	250	657384
F	85021	3.43	1.68	175	250	252105
E	85021	1.81	1.68	175	250	133035
D	85018	1.89	1.68	320	250	254016
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

1915599

SECTION : 1250 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O	85027	1.51	1.68	380	250	240996
N	85027	2.17	1.68	380	250	346332
M/N						0
Mu	85027	1.85	1.68	420	250	326340
Ml	85027	1.2	1.68	420	250	211680
L/M						0
L	85027	1.62	1.68	590	250	401436
K/L						0
K	85027	1.08	1.68	570	250	258552
J						0
I	85027	5.03	1.68	130	250	274638
I	85026	5.68	1.68	840	250	2003904
H/I						0
H	85027	2.25	1.68	150	250	141750
H	85026	3.43	1.68	800	250	1152480
PH						0
Gu						0
Bl						0
F/B						0
F						0
E						0
D						0
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 5358108

SECTION : 1500 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O	85027	1.51	1.68	55	250	34881
O	85010	4.6	1.68	365	250	705180
N	85027	2.17	1.68	285	250	259749
N	85010	1.84	1.68	675	250	521640
Mu	85027	1.85	1.68	820	250	637140
M1	85027	1.2	1.68	820	250	413280
M	85023	15.48	1.68	170	250	1105272
M	85010	3.96	1.68	580	250	964656
M1						0
L/M						0
L	85027	1.62	1.68	860	250	585144
L	85023	4.57	1.68	320	250	614208
K/L						0
K	85027	1.08	1.68	1045	250	474012
K	85023	4.47	1.68	320	250	600768
K	85011	3.47	1.68	700	250	1020180
J	84006	3.56	1.68	250	250	375800
I	85028	4.74	1.68	595	250	1184526
I	85027	5.03	1.68	110	250	232786
I	85026	5.68	1.68	770	250	1836912
I	85011	1.75	1.68	320	250	235200
I	84007	5.43	1.68	735	250	1676241
H/I						0
H	85028	4.08	1.68	590	250	1011024
H	85027	2.25	1.68	110	250	103950
H	85026	3.43	1.68	1025	250	1476615
H	84007	3.98	1.68	730	250	1220268
PH						0
Bu						0
GI	84007	0.89	1.68	935	250	349503
						0
						0
F/B						0
F						0
E						0
D						0
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

17636535

SECTION : 1750 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D	85005	1	1.68	30	250	12600
D	85010	4.6	1.68	70	250	135240
N	85010	1.84	1.68	430	250	332304
M/N			1.68			0
M	85023	15.48	1.68	290	250	1885464
M	85010	3.96	1.68	780	250	1297296
L/M			1.68			0
L	85023	4.57	1.68	425	250	815745
L	85005	0.61	1.68	125	250	32025
K/L			1.68			0
K	85027	1.08	1.68	465	250	210924
K	84006	2.88	1.68	185	250	223776
K	85023	4.47	1.68	400	250	750960
K	85005	3.1	1.68	130	250	169260
K	85011	3.47	1.68	760	250	1107624
J	84006	3.56	1.68	740	250	1106448
I	85028	4.74	1.68	170	250	338436
I	85026	5.68	1.68	410	250	978096
I	84006	5.04	1.68	300	250	635040
I	85011	1.75	1.68	500	250	367500
I	84007	5.43	1.68	750	250	1710450
H/I			1.68			0
H	85028	4.08	1.68	160	250	274176
H	85026	3.43	1.68	465	250	669879
H	84006	5.8	1.68	215	250	523740
H	84007	3.98	1.68	740	250	1236984
PH			1.68			0
G1	84017	0.97	1.68	80	250	32592
G1	84007	0.89	1.68	1140	250	426132
F/B			1.68			0
F	85008	0.66	1.68	410	250	113652
F	85017	1.93	1.68	140	250	113484
F	84007	1.07	1.68	1175	250	528045
E	85017	2.34	1.68	90	250	88452
E	84007	1	1.68	1140	250	478800
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

16595124

SECTION : 2000 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
Q	85005	1	1.68	95	250	39900
Q	85010	4.6	1.68	290	250	560280
N	85010	1.84	1.68	325	250	251160
M/N			1.68			0
M	85023	15.48	1.68	295	250	1917972
M	85005	2.93	1.68	30	250	36918
M	85010	3.96	1.68	500	250	831600
MJ			1.68			0
L/M			1.68			0
L	85023	4.57	1.68	300	250	575820
L	85005	0.61	1.68	250	250	64050
K/L			1.68			0
K	85023	4.47	1.68	190	250	356706
K	85005	3.1	1.68	260	250	338520
K	85011	3.47	1.68	650	250	947310
J	84006	3.56	1.68	1010	250	1510152
I	84006	5.04	1.68	390	250	825552
I	85011	1.75	1.68	590	250	433650
I	84007	5.43	1.68	365	250	832419
H/I			1.68			0
H	84006	5.8	1.68	390	250	950040
H	84007	3.98	1.68	490	250	819084
PH	84007	2.98	1.68	1140	250	1426824
GI	85017	0.97	1.68	250	250	101850
GI	84007	0.89	1.68	790	250	295302
F/B			1.68			0
F	85006	3.1	1.68	120	250	156240
F	85008	0.66	1.68	610	250	169092
F	85017	1.93	1.68	205	250	166173
F	84007	1.07	1.68	790	250	355026
E	85006	0.91	1.68	310	250	118482
E	85017	2.34	1.68	135	250	132678
E	84007	1	1.68	795	250	333900
D			1.68			0
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

14546700

SECTION : 2250 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O						0
N						0
M/N						0
M	85010	3.96	1.68	20	175	23284.8
M1						0
L/M						0
L	85005	0.61	1.68	45	175	8070.3
K/L						0
K	85005	3.1	1.68	50	175	45570
K	85011	3.47	1.68	55	175	56109.9
J	84006	3.56	1.68	210	175	219794.4
I	85024	6.45	1.68	45	175	85333.5
I	84006	5.04	1.68	235	175	348213.6
I	85017	5.37	1.68	170	175	268392.6
I	85011	1.75	1.68	95	175	48877.5
H/I						0
H	85024	4.62	1.68	150	175	203742
H	85017	4.67	1.68	90	175	123568.2
PH	84007	2.98	1.68	440	175	385492.8
G	85006	3.49	1.68	360	175	369381.6
G1	85008	0.67	1.68	60	175	11818.8
G1	85017	0.97	1.68	315	175	89831.7
G1	84007	0.89	1.68	255	175	66723.3
F/G						0
F	85006	3.1	1.68	450	175	410130
F	85008	0.66	1.68	45	175	8731.8
F	85017	1.93	1.68	270	175	153203.4
F	84007	1.07	1.68	600	175	188748
E	85006	0.91	1.68	430	175	115042.2
E	85017	2.34	1.68	145	175	99754.2
E	84007	1	1.68	450	175	132300
D	85020	4.74	1.68	1370	175	1909177.2
C	85020	1.19	1.68	1485	175	519542.1
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 5890833.9

SECTION : 2350 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
D						0
N						0
M/N						0
M	85010	3.96	1.68	40	125	33284
L/M						0
L	85005	0.61	1.68	15	125	1921.5
K/L						0
K	85005	3.1	1.68	15	125	9765
K	85011	3.47	1.68	20	125	14574
J	84006	3.56	1.68	130	125	97188
I	84006	5.04	1.68	145	125	153468
I	84008	3.86	1.68	100	125	81060
I	85017	5.37	1.68	170	125	191709
H/I						0
H	85006	2.76	1.68	95	125	55052
H	84006	5.8	1.68	620	125	755160
H	84008	6.41	1.68	105	125	141340.5
H	85017	4.67	1.68	160	125	156912
H	84007	3.98	1.68	255	125	213129
PH	84008	3.28	1.68	70	125	48216
PH	84007	2.98	1.68	440	125	275352
B	85006	3.49	1.68	230	125	168567
G1	85017	0.98	1.68	90	125	18522
G1	84007	0.89	1.68	55	125	10279.5
F/G						0
F	85006	3.1	1.68	260	125	169260
F	85017	1.93	1.68	95	125	38503.5
F	84007	1.07	1.68	455	125	102238.5
E	85006	0.91	1.68	245	125	46819.5
E	85017	2.34	1.68	105	125	51597
E	84007	1	1.68	225	125	47250
D	85020	4.74	1.68	1175	125	1169595
C	85020	1.19	1.68	1475	125	368602.5
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 4419355.5

SECTION : 2500 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
Q						0
N	85003	1.58	1.68	25	150	9954
M/N						0
Mu						0
M1						0
L/M						0
K/L						0
K	84008	3.93	1.68	55	150	54469.8
K	85011	3.47	1.68	50	150	43722
J						0
I	85009	4.9	1.68	125	150	154350
I	84008	3.86	1.68	45	150	43772.4
I	85001	4.38	1.68	300	150	331128
H/I						0
H	84008	6.41	1.68	40	150	64612.8
H	84007	3.98	1.68	250	150	250740
H	85001	2.15	1.68	75	150	40635
PH	84007	2.98	1.68	330	150	247816.8
GI	85017	0.91	1.68	15	150	3439.8
F/G						0
F	85006	3.1	1.68	65	150	50778
F	85017	1.93	1.68	25	150	12159
F	84007	1.07	1.68	320	150	86284.8
E	85006	0.91	1.68	185	150	42424.2
E	85017	2.34	1.68	25	150	14742
E	84007	1	1.68	15	150	3780
D	85020	4.74	1.68	810	150	967528.8
C						0
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 2422337.4

SECTION : 2650 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D	85005	1	1.68	55	125	11550
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
K/L			1.68			0
K	85005	3.1	1.68	15	125	9765
K	84008	3.93	1.68	55	125	45391.5
K	85011	3.47	1.68	70	125	0
I	82005	4.98	1.68	5	125	5229
I	84008	3.86	1.68	15	125	12159
I	85011	1.75	1.68	70	125	25725
H/I			1.68			0
H	85017	4.67	1.68	15	125	14710.5
H	84007	3.98	1.68	200	125	167160
PH	84007	2.98	1.68	155	125	96999
Su			1.68			0
G1			1.68			0
F/G			1.68			0
F	85006	3.1	1.68	35	75	13671
F	85013	4.21	1.68	40	125	35364
F	85019	4.21	1.68	10	125	8841
F	84007	1.07	1.68	400	125	89880
E	85020	1.91	1.68	50	125	20055
E	85006	0.91	1.68	65	125	12421.5
E	85017	2.34	1.68	285	125	140049
E	84007	1	1.68	620	125	130200
D	85020	4.74	1.68	1060	125	1055124
D	85016	2.41	1.68	1640	125	830004
C			1.68			0
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

2724298.5

SECTION : 2750 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
D	85005	1	1.68	145	175	42630
N			1.68			0
M/N			1.68			0
Mu			1.68			0
M1			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
J			1.68			0
I	85001	4.38	1.68	250	175	321930
H/I			1.68			0
H	85004	3.96	1.68	20	175	23284.8
H	84008	6.41	1.68	140	175	263835.6
PH	85004	3.28	1.68	115	175	110896.8
PH	84008	2.09	1.68	225	175	138253.5
Gu			1.68			0
G1			1.68			0
F/G			1.68			0
F	84007	1.07	1.68	625	175	196612.5
E	85020	1.91	1.68	290	175	162846.6
E	85017	2.34	1.68	250	175	171990
E	84007	1	1.68	350	175	102900
D	85020	4.74	1.68	790	175	1100912.4
D	85016	2.41	1.68	155	175	109823.7
C	85020	1.19	1.68	770	175	269392.2
C	85019	0.51	1.68	440	175	65973.6
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

3081281.7

SECTION : 3000 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
O						0
N						0
M/N						0
Mu						0
M	82005	2.24	1.68	40	250	37632
L/M						0
L	85012	1.37	1.68	40	250	23016
K/L			1.68			0
K	85011	3.47	1.68	55	250	80157
J						0
I						0
H/I						0
H	85004	3.96	1.68	5	250	8316
H	85016	6.75	1.68	95	250	269325
H	85013	4.37	1.68	110	250	201894
PH						0
Bu						0
B	85016	0.79	1.68	90	250	29862
G1	85013	0.65	1.68	30	250	8190
G1	85019	0.52	1.68	40	250	8736
F/G						0
F	85004	2.35	1.68	55	250	54285
F	85016	2.13	1.68	90	250	80514
F	85013	4.21	1.68	30	250	53046
F	85019	4.21	1.68	675	250	1193535
E	85020	1.91	1.68	155	250	124341
E	85004	2.23	1.68	65	250	60879
E	85016	2.22	1.68	325	250	303030
E	85017	2.34	1.68	140	250	137592
D	85020	4.74	1.68	320	250	637056
D	85016	2.41	1.68	405	250	409941
C	85020	1.19	1.68	150	250	74970
C	85019	0.51	1.68	445	250	95319
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

3891636

SECTION : 3250 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
O			1.68			0
N			1.68			0
M/N			1.68			0
M	82005	2.24	1.68	100	175	65856
M1			1.68			0
L/M			1.68			0
L	85012	1.37	1.68	310	175	124861.8
K/L			1.68			0
K			1.68			0
J			1.68			0
I			1.68			0
H/I			1.68			0
H	83001	4.54	1.68	160	175	213561.6
H	85014	2.09	1.68	100	175	61446
PH			1.68			0
Gu			1.68			0
G	85015	1.3	1.68	60	175	22932
G	85016	0.79	1.68	65	175	15096.9
G	85001	0.94	1.68	240	175	66326.4
G1	85013	0.65	1.68	95	175	18154.5
F/G			1.68			0
F	85016	2.13	1.68	30	175	18786.6
F	85013	4.21	1.68	165	175	204227.1
F	85019	4.21	1.68	500	175	618870
E	85020	1.91	1.68	240	175	134769.6
E	85015	0.95	1.68	35	175	9775.5
E	85016	2.22	1.68	255	175	166433.4
D	85020	4.74	1.68	1010	175	1407495.6
D	85016	2.41	1.68	310	175	219647.4
C	85020	1.19	1.68	1060	175	370851.6
C	85019	0.51	1.68	415	175	62225.1
B			1.68			0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 3801317.1

SECTION : 3350 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P						0
D						0
N						0
M/N						0
M	82005	2.24	1.68	60	125	28224
M1						0
L/M						0
L	85012	1.37	1.68	220	125	63294
K/L						0
K						0
J						0
I	84014	5.46	1.68	60	125	68796
H/I						0
H	85014	2.09	1.68	400	125	175560
PH						0
G	85015	1.3	1.68	15	125	4095
G	85016	0.79	1.68	80	125	13272
F/G						0
F	85016	2.13	1.68	165	125	73804.5
F	85013	4.21	1.68	35	125	30943.5
F	85019	4.21	1.68	170	125	150297
E	85020	1.91	1.68	135	125	54148.5
E	85015	0.95	1.68	15	125	2992.5
E	85016	2.22	1.68	295	125	137529
D	85020	4.74	1.68	755	125	751527
D	85018	1.89	1.68	360	125	142884
D	85016	2.41	1.68	290	125	146769
C	85020	1.19	1.68	1085	125	271141.5
C	85019	0.51	1.68	370	125	39627
B						0

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 2154904.5

SECTION : 3500 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m	*/FS
P			1.68			0	
O			1.68			0	
N			1.68			0	
M/N			1.68			0	
Mu			1.68			0	
M1			1.68			0	
L/M			1.68			0	
L	85012	1.37	1.68	75	200	34524	
K/L			1.68			0	
K			1.68			0	
J			1.68			0	
I			1.68			0	
H/I			1.68			0	
H			1.68			0	
PH			1.68			0	
Gu			1.68			0	
G1			1.68			0	
F/G			1.68			0	
F	85021	3.43	1.68	95	200	109485.6	
E	85021	1.81	1.68	425	200	258468	
D	85020	4.74	1.68	260	200	414086.4	
D	85018	1.89	1.68	535	200	339746.4	
D	85016	2.41	1.68	530	200	429172.8	
C	85020	1.19	1.68	315	200	125949.6	
C	85019	0.51	1.68	200	200	34272	
B			1.68			0	

seams >=0.5m

TOTAL TONNES FOR THIS SECTION : 1745704.8

SECTION : 3750 N
 RESOURCE TYPE : INFERRED

SEAM NAME	DIAMOND DRILL HOLE	SEAM THICKNESS (m)	SPECIFIC GRAVITY (t/m ³)	SEAM LENGTH (m)	WIDTH INFLUENCE (m)	TOTAL TONNES SEAMS >=0.5m
P			1.68			0
O			1.68			0
N			1.68			0
M/N			1.68			0
Mu			1.68			0
Ml			1.68			0
L/M			1.68			0
L			1.68			0
K/L			1.68			0
K			1.68			0
J			1.68			0
I			1.68			0
H/I			1.68			0
H			1.68			0
PH			1.68			0
Gu			1.68			0
Gl			1.68			0
F/G			1.68			0
F	85018	6.02	1.68	135	250	341334
F	85021	3.43	1.68	90	250	129654
E	85021	1.81	1.68	160	250	121632
D	85018	1.89	1.68	670	250	531846
D	85016	2.41	1.68	215	250	217623
C	85019	0.51	1.68	75	250	16065
B			1.68			0

 seams >=0.5m

TOTAL TONNES FOR THIS SECTION :

1358154

APPENDIX F

Survey Control Points

Underwood McLellan Ltd.

17007-107 Avenue
Edmonton, Alberta T5S-1G3
Telephone 483-7722
Telex 037-2537

1984 10 22

8408-033

Gulf Canada Resources Inc.
16th Floor, 401 - 9th Avenue S.W.
CALGARY, Alberta
T2P 2H7

ATTENTION: Virginia Duford

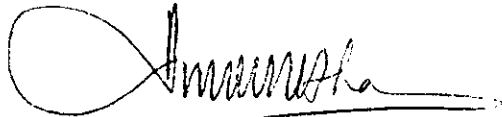
Dear Madam:

RE: KLAPPAN PHOTO CONTROL PROJECT

Enclosed please find one mylar and six prints of the above project. Attached with this letter also is a coordinate list of points 1 through 32. We will be mailing you marked photographs at a later date.

Yours truly,

UNDERWOOD McLELLAN LTD.



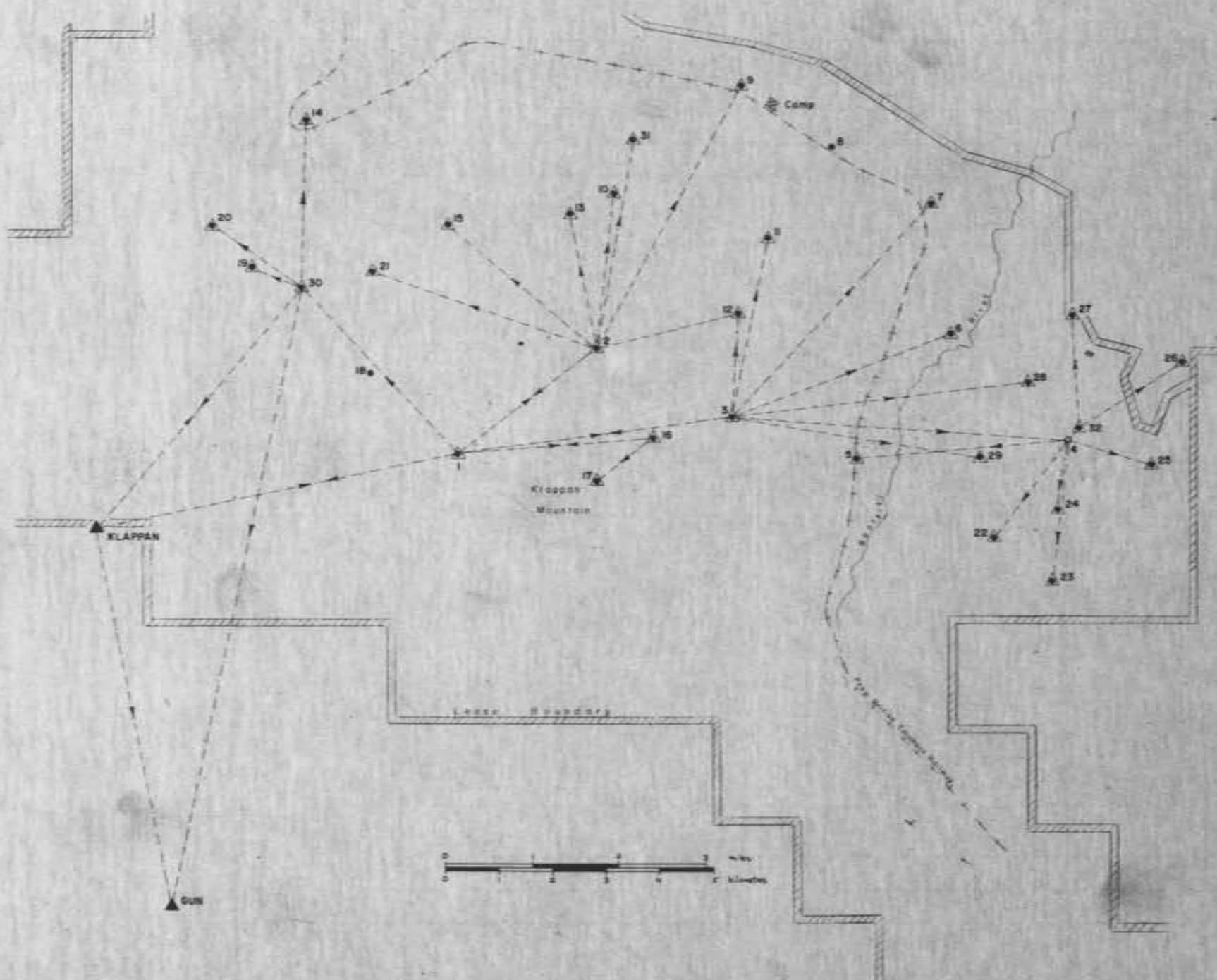
A. M. Hasham, A.L.S., C.L.S.
DEPARTMENT HEAD, SURVEYS

AMH/ma
encl.

cc: Jack Byrne, WPL

GULF CANADA RESOURCES LTD.
 KLAPPAN PROJECT
 UTM COORDINATES AND ELEVATIONS IN METRES

<u>Station</u>	<u>Northing</u>	<u>Easting</u>	<u>Elevation</u>	<u>Combined Factor</u>
Klapp	6339433.211	500643.617	2055.97	0.9992773
1	6340897.393	507374.673	1992.14	0.9992873
2	6342815.874	510040.538	1947.74	0.9992942
3	6341503.659	512501.886	1900.64	0.9993016
4	6341088.498	518803.258	1773.20	0.9993217
5	6340737.487	514811.910	1262.00	
6	6343063.628	516563.742	1212.65	
7	6345272.975	516202.608	1288.05	
8	--	--	1306.85	
9	6347687.715	512369.102	1315.81	
10	6345715.207	510307.729	1487.85	
11	6344832.174	513143.108	1463.37	
12	6343496.744	512666.846	1507.48	
13	6345190.849	509299.578	1498.83	
14	6346976.376	504508.437	1303.43	
15	6345269.690	507316.999	1545.35	
16	6341132.813	510994.446	1939.06	
17	6340334.972	510000.851	1997.74	
18	--	--	1653.69	
19	6344270.491	503573.099	1450.28	
20	6345007.754	502770.057	1363.45	
21	6344204.341	505825.139	1839.07	
22	6339479.518	517156.377	1496.82	
23	6338541.544	518458.029	1907.65	
24	6339785.320	518551.382	1786.62	
25	6340630.794	520345.585	1435.48	
26	6342626.804	520852.154	1295.91	
27	6343433.249	519098.335	1345.96	
28	6342040.981	518166.514	1447.85	
29	6340796.856	517163.784	1380.27	
30	6343925.902	504432.361	1848.14	0.9993099
31	6346767.041	510543.015	1407.39	
32	6341344.971	519121.156	1715.51	0.9993306



707

- — Horizontal & Vertical Control Point
- — Vertical Control Point
- Direction of Observation

Gulf Canada Resources Inc.

Sketch showing
Location of Photo Control Points
Klappan Mountain Lease Area

Lat. 57° 12' - Long. 128° 59' (Approx.)

REPORT

GULF CANADA RESOURCES INC.
KLAPPAN PROJECT

PHOTOGRAPHIC CONTROL SURVEY AT KLAPPAN SITE

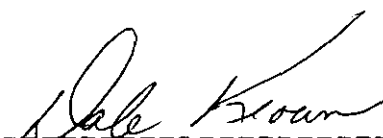
The above said survey was undertaken by the undersigned in order to tie in existing targets set by others. The field work was commenced on the afternoon of September 5, 1985 and completed on September 10, 1985. During the course of this survey a total of 66 stations were set, of which, 59 were targetted. The remaining 7 stations were set as traverse stations. Each station was marked by an iron bar; a metal tag number was wired to same which corresponds to the station number indicated on the plan and listing.

The survey was set up to include, into loops, as many stations as feasible, but, do to the time of year it was decided by myself that it would take far to long to include every target in a closed loop so many of them were cut in from main stations as sideshots. Although this method is very fast it doesn't allow for any checking and, as such, leaves room for gross error.

Much of the existing control, set by others, had to be retraced because it was not marked or numbered for ground identification. This caused an uncertainty which required verification by survey and, I would point out, added about a day to the length of the survey.

The survey itself was run with two Wild T2s for angulation and a Wild DI4L for distance measurements. Horizontal angles were read a minimum of six times (three on each face) while the distances were read in both feet and metres for checking purposes. The elevations were determined by reciprocal vertical angles read a minimum of four times (two on each face). The resulting horizontal closures ranged from a precision of 1 in 298000 to 1 in 50000. The average vertical adjustment for any one leg was just under 0.030 metres. Our co-ordinates are derived from the existing station number 21 (our number 71) because of its location so close to the mine. The bearings were derived from the UTM grid bearings between this station and old station 2 (our station 72). The elevation were also derived from old station 21.

Respectfully submitted by
McWilliam, Whyte, Goble & Associates

per 

Dale Keown B.C.L.S.

GULF CANADA RESOURCES INC.
KLAPPAN PROJECT

UTM , ELEVATION AND COMBINED FACTOR LISTING

STATION	NORTHING	EASTING	ELEVATION	COMBINED FACTOR
-----	-----	-----	-----	-----
63 (T)	6344245.645	504806.952	1834.21	.9993132
64	6345007.907	502770.129	1363.40	.9993867
65	6345862.633	502951.611	1378.63	.9993843
66	6346914.957	502807.383	1415.70	.9993785
67	6349090.629	508489.028	1358.80	.9993882
68	6344431.739	505342.933	1672.86	.9993386
69 (T)	6343105.074	504309.119	1775.94	.9993223
70	6340956.069	505077.960	1640.75	.9993435
71 (T)	6344204.341	505825.139	1839.07	.9993126
72	6342815.874	510040.537	1947.56	.9992964
73 (T)	6344614.099	506945.986	1753.73	.9993261
74	6343496.814	512666.849	1507.26	.9993661
75	6341503.683	512501.952	1900.68	.9993045
76	6340897.368	507374.684	1991.95	.9992889
77	6341132.849	510994.458	1938.61	.9992981
78	6343280.496	508047.623	1579.49	.9993536
79	6344341.013	508240.477	1555.29	.9993574
80	6344049.389	507056.389	1691.11	.9993359
81	6343923.980	506391.562	1730.00	.9993297
82	6342362.657	506266.112	1641.81	.9993435
83	6342206.632	507795.199	1716.73	.9993320
84	6340334.986	510000.875	1997.36	.9992886
85	6341228.797	509439.665	1693.32	.9993361
86	6344247.801	505683.511	1838.96	.9993126
87	6343925.902	504432.391	1848.08	.9993110
88	6343478.357	504653.160	1824.13	.9993148
89	6339610.890	507183.908	1769.90	.9993236
90	6344270.351	503573.190	1450.09	.9993732
91	6344134.061	502023.035	1423.27	.9993772
92	6342191.995	501829.468	1432.86	.9993757
93	6340471.524	503629.880	1543.61	.9993586
94	6342208.742	503950.838	1654.87	.9993412
95	6339736.971	505232.153	1577.66	.9993534
96 (T)	6338546.156	505478.922	1816.15	.9993161

STATION	NORTHING	EASTING	ELEVATION	COMBINED FACTOR
97	6338947.070	507203.307	1637.91	.9993442
98	6338727.733	509282.290	1600.46	.9993506
99 (T)	6336926.650	509655.454	1707.75	.9993339
100	6336935.965	511463.440	1378.15	.9993859
101	6337941.392	511481.855	1604.62	.9993505
102	6339101.086	511877.968	1877.54	.9993079
103	6339914.592	513089.111	1792.90	.9993215
104	6343063.610	516564.047	1212.54	.9994136
105	6343209.710	515441.454	1285.21	.9994017
106	6344583.688	516011.253	1305.78	.9993988
107	6346724.987	514898.940	1270.33	.9994039
108	6344812.937	512664.795	1486.67	.9993693
109	6344943.133	513854.405	1440.07	.9993770
110	6344832.289	513143.217	1463.29	.9993731
111 (T)	6347688.028	512369.031	1315.71	.9993959
112	6348548.447	511454.321	1326.96	.9993939
113	6346767.195	510542.912	1407.14	.9993812
114	6343997.192	510587.175	1666.15	.9993406
115	6346487.454	509020.672	1416.27	.9993793
116	6345715.214	510307.769	1487.62	.9993685
117	6345070.357	509744.670	1555.46	.9993577
118	6348222.449	509443.509	1343.85	.9993908
119	6349299.669	506915.591	1330.61	.9993923
120	6349144.450	505227.306	1281.72	.9993997
121	6346129.299	507644.512	1448.66	.9993740
122	6345003.992	506874.830	1646.36	.9993429
123	6348019.209	506779.438	1337.59	.9993912
124	6346245.159	505140.840	1395.20	.9993819
125	6346976.782	504508.486	1303.43	.9993962
126	6347039.274	504942.472	1322.68	.9993933
127	6347689.996	512367.982	1315.75	.9993959
128	6347598.721	506153.551	1332.60	.9993919

Note: All stations are targetted except those indicated as traverse stations only by (T).

707

GULF CANADA RESOURCES INC.

PLAN OF MAPPING CONTROL AT KLAPPAN MOUNTAIN, B.C.

SCALE: 1: 25,000

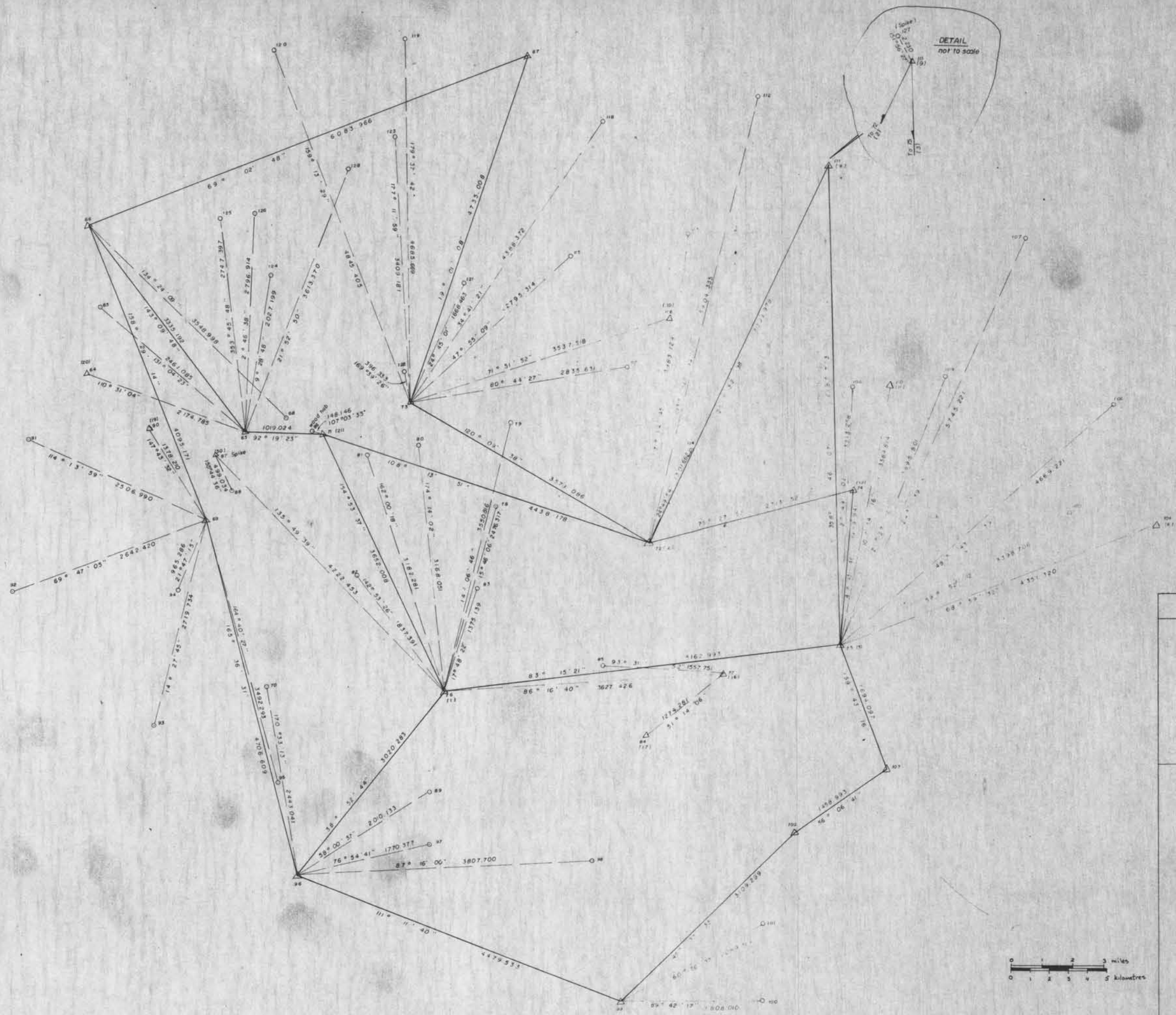
LEGEND

- Adjusted traverse
- Side shot

- All stations marked by iron bar (except as noted)
- Station numbers in brackets are existing control numbers by others
- All stations are identified on ground by metal tag number.



McWilliam, Whyte, Goble & Associates.
B.C. Land Surveyors,
Prince George - Kamloops - Smithers - Salmon Arm.
REF NO. 2832



GR-MT. KLAPPAN 85A

LOST-FOX AREA
CONFIDENTIAL COAL
QUALITY DATA FROM
APPENDIX I (COAL
TRENCH DATA)

~~CONFIDENTIAL~~

707

1985 TRENCH

DATA



GULF CANADA LIMITED
Sample #5952

BASIC STATISTICS

Number of Observations.....	100
Mean Maximum Reflectance (Romax)...%	2.43
Standard Error of the Mean.....	.02
Coefficient of Variation.....%	6.80
Variance.....	.0273
Standard Deviation.....	.1651
Skewness.....	-.0488
Kurtosis.....	2.2544

CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
17	2.05	1	1.00
18	2.10	4	4.00
19	2.15	4	4.00
20	2.20	5	5.00
21	2.25	7	7.00
22	2.30	15	15.00
23	2.35	8	8.00
24	2.40	7	7.00
25	2.45	8	8.00
26	2.50	12	12.00
27	2.55	12	12.00
28	2.60	9	9.00
29	2.65	5	5.00
30	2.70	1	1.00
31	2.75	1	1.00
32	2.80	1	1.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V20	1.00
V21	8.00
V22	12.00
V23	23.00
V24	15.00
V25	24.00
V26	14.00
V27	2.00
V28	1.00

CONFIDENTIAL

VITRINITE HISTOGRAM

Frequency (%)

16.0

14.0

12.0

10.0

8.0

6.0

4.0

2.0

0.0

1.25

1.70

2.15

2.60

3.05

3.50

3.95

4.40

4.85

5.30

5.75

6.20

6.65

7.10

7.55

Gulf Canada Limited

Sample #5952

Mean Maximum Reflectance = 2.43%

Maximum Reflectance (%)

GULF CANADA LIMITED
Sample #5951

BASIC STATISTICS

Number of Observations.....	100
Mean Maximum Reflectance (Romax)...%	3.02
Standard Error of the Mean.....	.01
Coefficient of Variation.....%	4.82
Variance.....	.0212
Standard Deviation.....	.1457
Skewness.....	-.4830
Kurtosis.....	2.4893

CELL STATISTICS

Cell Number	Lower Limit	Number of Observations	Frequency (%)
5	2.65	1	1.00
6	2.70	4	4.00
7	2.75	6	6.00
8	2.80	2	2.00
9	2.85	9	9.00
10	2.90	5	5.00
11	2.95	9	9.00
12	3.00	14	14.00
13	3.05	14	14.00
14	3.10	17	17.00
15	3.15	7	7.00
16	3.20	9	9.00
17	3.25	3	3.00

VITRINITE TYPE DISTRIBUTION

Vitrinite Type	Frequency (%)
V26	1.00
V27	10.00
V28	11.00
V29	14.00
V30	28.00
V31	24.00
V32	12.00

VITRINITE HISTOGRAM

Frequency (%)

18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0

Gulf Canada Limited

Sample #5951

Mean Maximum Reflectance = 3.02%

2.45 2.65 2.85 3.05 3.25 3.45 3.65 3.85 4.05 4.25 4.45 4.65 4.85 5.05 5.25

Maximum Reflectance (%)

GCRI COAL DIVISION		SAMPLE PRODUCT		PROJ	KPN	BLK	LR	DS	TRC85030
SAMPLE ID	07601	SAMPLE PRODUCT TYPE (CLEAN,RAW)			RAW				
SAMPLE PRODUCT ID	SP1	SAMPLE WEIGHT			(KG)				
FRACTION SIZE FROM (MM)	FRACTION SIZE TO (MM)	CUTPOINT	YIELD/FRACTION%	YIELD/FRACTION% RELATIVE TO TOTAL SAMPLE					
50.00	0.00	---	---	100.00					
---	---	---	---	---					
---	---	---	---	---					
---	---	---	---	---					
---	---	---	---	---					
			TOTAL YIELD	100.00					

-NOTES-

GCRI COAL DIVISION		HEAD	PROJ	KPN	BLK	LR	DS	TRC85030
SAMPLE ID	07601	DATA TYPE (REAL,BORO,AVER,CALC)						REAL
SPLIT SAMPLE ID	HD1	DATE ANALYSED 20/09/85						
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)		ASTM						AD
TOP SIZE (MM)	---							
SURFACE MOISTURE %	---							TOTAL SULPHUR % 0.39
TOTAL MOISTURE %	---							PHOSPHOROUS % ---
EQUILIBRIUM MOISTURE %	---							CHLORINE (PPM) ---
RESIDUAL MOISTURE %	4.57	FSI					1.46	
ASH %	15.40	HGI					---	
VOLATILE MATTER %	13.52	CO2 %					---	
FIXED CARBON %	66.51							
GROSS CALORIFIC VALUE (MJ/KG)	24.77							
NET CALORIFIC VALUE (MJ/KG)	---							

GCRI COAL DIVISION		ULTIMATE	PROJ	KPN	BLK	LR	DS	TRC85030
SAMPLE ID	07601	DATA TYPE (REAL,BORO,AVER,CALC)						REAL
SAMPLE PRODUCT ID	SP1	DATE ANALYSED 26/11/85						
SPLIT SAMPLE ID	UL1	ANALYSIS BASIS TYPE (DAF,DB,AD)						AD
WATER	%	4.57						
CARBON	%	70.63						
HYDROGEN	%	1.75						
SULPHUR	%	0.39						
NITROGEN	%	0.85						
ASH	%	15.40						
OXYGEN	%	6.41						

GCRI COAL DIVISION ASH FUSION PROJ KPN BLK LR DS TRC85030
=====

SAMPLE ID 07601
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AF1 DATE ANALYSED 26/11/85

OXIDIZING ATMOSPHERE

INITIAL TEMP.(C) 1252.0
SOFTENING TEMP.(C) 1399.0
HEMISPHERICAL TEMP.(C) 1423.0
FLUID TEMP.(C) 1448.0

REDUCING ATMOSPHERE

INITIAL TEMP.(C) 1187.0
SOFTENING TEMP.(C) 1340.0
HEMISPHERICAL TEMP.(C) 1386.0
FLUID TEMP.(C) 1434.0

NORMAL RANGES ALL TEMPS.
1000.0 >= VALUES <= 1500.0
OXIDATION TEMPS >= REDUCTION TEMPS

GCRI COAL DIVISION ASH MINERAL PROJ KPN BLK LR DS TRC85030
=====

SAMPLE ID 07601
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AM1 DATE ANALYSED 26/11/85

SILICON DIOXIDE %	(SI02)	58.72
ALUMINIUM OXIDE %	(AL2O3)	22.55
FERRIC OXIDE %	(FE2O3)	6.91
TITANIUM DIOXIDE %	(TI02)	0.81
PHOSPHOROUS PENTOXIDE %	(P2O5)	0.59
CALCIUM OXIDE %	(CAO)	1.85
MAGNESIUM OXIDE %	(MGO)	3.07
SULPHUR TRIOXIDE %	(SO3)	0.43
SODIUM OXIDE %	(NA2O)	1.62
POTASSIUM OXIDE %	(K2O)	0.97

90.0 <= TOTAL <= 100.0

```

GCRI COAL DIVISION  SAMPLE PRODUCT  PROJ  KPN  BLK  LR  DS  TRC85036
=====
SAMPLE ID            07607          SAMPLE PRODUCT TYPE (CLEAN,RAW)  RAW
SAMPLE PRODUCT ID   SP1            SAMPLE WEIGHT (KG)                ----
FRACTION SIZE      FRACTION SIZE  CUTPOINT  YIELD/FRACTION%  YIELD/FRACTION%
FROM (MM)          TO (MM)
50.00              0.00          ----          ----          100.00
----              ----          ----          ----          ----
----              ----          ----          ----          ----
----              ----          ----          ----          ----
----              ----          ----          ----          ----
TOTAL YIELD 100.00

```

-NOTES-

```

GCRI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85036
=====
SAMPLE ID            07607          DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID     HD1            DATE ANALYSED 15/09/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)          ----
SURFACE MOISTURE %    ----          TOTAL SULPHUR %          0.42
TOTAL MOISTURE %      ----          PHOSPHOROUS %           ----
EQUILIBRIUM MOISTURE %  ----          CHLORINE (PPM)          ----
RESIDUAL MOISTURE %    3.91          SPECIFIC GRAVITY        1.50
ASH %                  18.94         FSI                      0.0
VOLATILE MATTER %     7.80          HGI                      58.0
FIXED CARBON %        69.35         CO2 %                    ----

GROSS CALORIFIC VALUE (MJ/KG)  25.87
NET CALORIFIC VALUE (MJ/KG)    ----

```

```

GCRI COAL DIVISION  ULTIMATE  PROJ  KPN  BLK  LR  DS  TRC85036
=====
SAMPLE ID            07607          DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SAMPLE PRODUCT ID   SP1            DATE ANALYSED 26/11/85
SPLIT SAMPLE ID     UL1
ANALYSIS BASIS TYPE (DAF,DB,AD)  AD

WATER %              3.91
CARBON %              69.19
HYDROGEN %            1.98
SULPHUR %             0.42
NITROGEN %            0.85
ASH %                  18.94
OXYGEN %              4.71

```

GCRI COAL DIVISION ASH FUSION PROJ KPN BLK LR DS TRC85036
=====

SAMPLE ID 07607
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AF1 DATE ANALYSED 26/11/85

OXIDIZING ATMOSPHERE

REDUCING ATMOSPHERE

INITIAL TEMP.(C)	1364.0	INITIAL TEMP.(C)	1198.0
SOFTENING TEMP.(C)	1423.0	SOFTENING TEMP.(C)	1252.0
HEMISPHERICAL TEMP.(C)	1450.0	HEMISPHERICAL TEMP.(C)	1294.0
FLUID TEMP.(C)	1472.0	FLUID TEMP.(C)	1439.0

NORMAL RANGES ALL TEMPS.
1000.0 >= VALUES <= 1500.0
OXIDATION TEMPS >= REDUCTION TEMPS

GCRI COAL DIVISION ASH MINERAL PROJ KPN BLK LR DS TRC85036
=====

SAMPLE ID 07607
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AM1 DATE ANALYSED 26/11/85

SILICON DIOXIDE %	(SI02)	55.84
ALUMINIUM OXIDE %	(AL2O3)	24.44
FERRIC OXIDE %	(FE2O3)	7.66
TITANIUM DIOXIDE %	(TI02)	0.90
PHOSPHOROUS PENTOXIDE %	(P2O5)	0.99
CALCIUM OXIDE %	(CAO)	1.71
MAGNESIUM OXIDE %	(MGO)	2.86
SULPHUR TRIOXIDE %	(SO3)	0.25
SODIUM OXIDE %	(NA2O)	1.78
POTASSIUM OXIDE %	(K2O)	1.12

90.0 <= TOTAL <= 100.0

```

GCRI COAL DIVISION  SAMPLE PRODUCT  PROJ  KPN  BLK  LR  DS  TRC85039
=====
SAMPLE ID            07610          SAMPLE PRODUCT TYPE (CLEAN,RAW)  RAW
SAMPLE PRODUCT ID   SP1            SAMPLE WEIGHT (KG)
FRACTION SIZE      FRACTION SIZE  CUTPOINT  YIELD/FRACTION%  YIELD/FRACTION%
FROM (MM)          TO (MM)
50.00              0.00          -----          -----          100.00
-----
-----
-----
-----
-----
-----
TOTAL YIELD 100.00

```

-NOTES-

```

GCRI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85039
=====
SAMPLE ID            07610          DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID     HD1            DATE ANALYSED 26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)          -----
SURFACE MOISTURE %     -----
TOTAL MOISTURE %       8.57
EQUILIBRIUM MOISTURE % -----
RESIDUAL MOISTURE %    1.31
ASH %                  23.06
VOLATILE MATTER %      6.34
FIXED CARBON %         69.29

TOTAL SULPHUR %        0.41
PHOSPHOROUS %         -----
CHLORINE (PPM)        -----
SPECIFIC GRAVITY       1.56
FSI                    -----
HGI                    47.0
CO2 %                  -----

GROSS CALORIFIC VALUE (MJ/KG)  25.94
NET CALORIFIC VALUE (MJ/KG)    -----

```

```

GCRI COAL DIVISION  ULTIMATE  PROJ  KPN  BLK  LR  DS  TRC85039
=====
SAMPLE ID            07610          DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SAMPLE PRODUCT ID   SP1            DATE ANALYSED 26/11/85
SPLIT SAMPLE ID     UL1
ANALYSIS BASIS TYPE (DAF,DB,AD)  AD

WATER %                1.31
CARBON %               69.67
HYDROGEN %             1.70
SULPHUR %              0.41
NITROGEN %             0.79
ASH %                  23.06
OXYGEN %               3.06

```

GCRI COAL DIVISION ASH FUSION PROJ KPN BLK LR DS TRC85039
=====

SAMPLE ID 07610
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AF1 DATE ANALYSED 26/11/85

OXIDIZING ATMOSPHERE

INITIAL TEMP.(C) 1257.0
SOFTENING TEMP.(C) 1313.0
HEMISPHERICAL TEMP.(C) 1332.0
FLUID TEMP.(C) 1375.0

REDUCING ATMOSPHERE

INITIAL TEMP.(C) 1192.0
SOFTENING TEMP.(C) 1257.0
HEMISPHERICAL TEMP.(C) 1289.0
FLUID TEMP.(C) 1316.0

NORMAL RANGES ALL TEMPS.
1000.0 >= VALUES <= 1500.0
OXIDATION TEMPS >= REDUCTION TEMPS

GCRI COAL DIVISION ASH MINERAL PROJ KPN BLK LR DS TRC85039
=====

SAMPLE ID 07610
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AM1 DATE ANALYSED 26/11/85

SILICON DIOXIDE %	(SI02)	60.29
ALUMINIUM OXIDE %	(AL2O3)	18.00
FERRIC OXIDE %	(FE2O3)	6.89
TITANIUM DIOXIDE %	(TI02)	0.73
PHOSPHOROUS PENTOXIDE %	(P2O5)	0.55
CALCIUM OXIDE %	(CAO)	3.11
MAGNESIUM OXIDE %	(MGO)	3.67
SULPHUR TRIOXIDE %	(SO3)	2.14
SODIUM OXIDE %	(NA2O)	1.54
POTASSIUM OXIDE %	(K2O)	1.38

90.0 <= TOTAL <= 100.0

GCRI COAL DIVISION		SAMPLE PRODUCT		PROJ	KPN	BLK	LR	DS	TRC85041
SAMPLE ID	07612	SAMPLE PRODUCT TYPE (CLEAN,RAW)			RAW				
SAMPLE PRODUCT ID	SP1	SAMPLE WEIGHT			(KG)				
FRACTION SIZE FROM (MM)	FRACTION SIZE TO (MM)	CUTPOINT	YIELD/FRACTION%	YIELD/FRACTION% RELATIVE TO TOTAL SAMPLE					
50.00	0.00	---	---	100.00					
---	---	---	---	---					
---	---	---	---	---					
---	---	---	---	---					
---	---	---	---	---					
			TOTAL YIELD	100.00					

-NOTES-

GCRI COAL DIVISION		HEAD	PROJ	KPN	BLK	LR	DS	TRC85041
SAMPLE ID	07612	DATA TYPE (REAL,BORO,AVER,CALC)						REAL
SPLIT SAMPLE ID	HD1	DATE ANALYSED 24/09/85						
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)		ASTM						AD
TOP SIZE (MM)	50.00							
SURFACE MOISTURE %	---							TOTAL SULPHUR % 0.43
TOTAL MOISTURE %	---							PHOSPHOROUS % ---
EQUILIBRIUM MOISTURE %	---							CHLORINE (PPM) ---
RESIDUAL MOISTURE %	4.31							SPECIFIC GRAVITY 1.50
ASH %	18.96							FSI ---
VOLATILE MATTER %	6.88							HGI 46.0
FIXED CARBON %	69.85							CO2 % ---
GROSS CALORIFIC VALUE (MJ/KG)	26.23							
NET CALORIFIC VALUE (MJ/KG)	---							

GCRI COAL DIVISION		ULTIMATE	PROJ	KPN	BLK	LR	DS	TRC85041
SAMPLE ID	07612	DATA TYPE (REAL,BORO,AVER,CALC)						REAL
SAMPLE PRODUCT ID	SP1	DATE ANALYSED 26/11/85						
SPLIT SAMPLE ID	UL1	ANALYSIS BASIS TYPE (DAF,DB,AD)						AD
WATER	%	4.31						
CARBON	%	71.73						
HYDROGEN	%	1.97						
SULPHUR	%	0.43						
NITROGEN	%	0.85						
ASH	%	18.96						
OXYGEN	%	1.75						

GORI COAL DIVISION ASH FUSION PROJ KPN BLK LR DS TRC85041
=====

SAMPLE ID 07612
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AF1 DATE ANALYSED 26/11/85

OXIDIZING ATMOSPHERE

INITIAL TEMP.(C) 1337.0
SOFTENING TEMP.(C) 1418.0
HEMISPHERICAL TEMP.(C) 1453.0
FLUID TEMP.(C) 1472.0

REDUCING ATMOSPHERE

INITIAL TEMP.(C) 1214.0
SOFTENING TEMP.(C) 1388.0
HEMISPHERICAL TEMP.(C) 1423.0
FLUID TEMP.(C) 1472.0

NORMAL RANGES ALL TEMPS.
1000.0 >= VALUES <= 1500.0
OXIDATION TEMPS >= REDUCTION TEMPS

GORI COAL DIVISION ASH MINERAL PROJ KPN BLK LR DS TRC85041
=====

SAMPLE ID 07612
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AM1 DATE ANALYSED 26/11/85

SILICON DIOXIDE %	(SI02)	58.21
ALUMINIUM OXIDE %	(AL2O3)	24.69
FERRIC OXIDE %	(FE2O3)	5.64
TITANIUM DIOXIDE %	(TI02)	1.22
PHOSPHOROUS PENTOXIDE %	(P2O5)	1.00
CALCIUM OXIDE %	(CAO)	1.69
MAGNESIUM OXIDE %	(MGO)	2.04
SULPHUR TRIOXIDE %	(SO3)	0.40
SODIUM OXIDE %	(NA2O)	1.71
POTASSIUM OXIDE %	(K2O)	1.32

90.0 <= TOTAL <= 100.0

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 17/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPNLRTRCB5041 SEAM - I

SAMPLE ID - 7612

WASHABILITY ID - WA1

----- ANALYSIS TYPE - FLOAT -----

FRACTION SIZE(MM)		50.00 X		6.00		RELATIVE WEIGHT % - 46.02				ASH % - 20.17				
SG-TME	ELEMENTAL	CUM.	FLOATS	CUM.	SINKS	CUM.	C.V.	CUM.	S	CUM.	CUM.	MOIST	CUM.	
WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ KG)	C.V.	S	S	VOL.	VOL.	MOIST	
1.40	0.09	10.80	0.09	10.80	99.91	20.00							1.88	1.88
1.45	1.00	4.13	1.09	4.68	98.91	20.16							1.24	1.29
1.50	16.10	4.11	17.19	4.15	82.81	23.29							3.55	3.41
1.60	55.98	7.30	73.17	6.56	26.83	56.64							4.22	4.03
1.70	8.30	22.74	81.47	8.21	18.53	71.82							3.12	3.94
1.80	2.26	35.79	83.73	8.95	16.27	76.83							1.79	3.88
2.00	2.17	53.24	85.90	10.07	14.10	80.46							2.31	3.84
2.60	14.10	80.46	100.00	20.00									2.11	3.60

----- ANALYSIS TYPE - FLOAT -----

FRACTION SIZE(MM)		6.00 X		0.60		RELATIVE WEIGHT % - 39.59				ASH % - 15.18				
SG-TME	ELEMENTAL	CUM.	FLOATS	CUM.	SINKS	CUM.	C.V.	CUM.	S	CUM.	CUM.	MOIST	CUM.	
WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ KG)	C.V.	S	S	VOL.	VOL.	MOIST	
1.40	0.20	2.72	0.20	2.72	99.80	15.79							1.03	1.03
1.45	11.78	2.79	11.98	2.79	88.02	17.53							1.14	1.14
1.50	33.59	4.83	45.57	4.29	54.43	25.37							2.04	1.80
1.60	34.89	9.41	80.46	6.51	19.54	53.88							2.82	2.24
1.70	5.48	21.51	85.94	7.47	14.06	66.50							2.16	2.24
1.80	2.36	30.89	88.30	8.09	11.70	73.68							2.62	2.25
2.00	2.24	44.50	90.54	9.00	9.46	80.59							2.78	2.26
2.60	9.46	80.59	100.00	15.77									2.93	2.33

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPnlRTRC85041 SEAM - I

SAMPLE ID - 7612

WASHABILITY ID - WA1

----- ANALYSIS TYPE - FLOAT -----

FRACTION SIZE(MM)		0.60 X 0.15		RELATIVE WEIGHT % - 8.44 ASH % - 20.67											
ELEMENTAL		CUM. FLOATS		CUM. SINKS		CUM. C.V. CUM.		CUM. CUM.		CUM. CUM.					
SG-TME	WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
1.40	8.44	3.02	8.44	3.02	91.56	21.44								0.51	0.51
1.45	10.01	2.60	18.45	2.79	81.55	23.76								0.37	0.43
1.50	21.24	3.79	39.69	3.33	60.31	30.79								1.07	0.77
1.60	25.87	6.99	65.56	4.77	34.44	48.67								2.04	1.27
1.70	9.88	16.20	75.44	6.27	24.56	61.73								2.21	1.40
1.80	4.40	24.07	79.84	7.25	20.16	69.94								2.61	1.46
2.00	4.52	39.61	84.36	8.98	15.64	78.71								2.48	1.52
2.60	15.64	78.71	100.00	19.89										2.42	1.66

----- ANALYSIS TYPE - FROTH -----

FRACTION SIZE(MM)		0.15 X 0.00		RELATIVE WEIGHT % - 5.95 ASH % - 28.40											
ELEMENTAL		CUM. FLOATS		CUM. SINKS		CUM. C.V. CUM.		CUM. CUM.		CUM. CUM.					
SG-TME	WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
240.00	*****	28.40	100.00	28.40										3.55	3.55

```

GCRI COAL DIVISION  SAMPLE PRODUCT  PROJ  KPN  BLK  LR  DS  TRC85042
=====
SAMPLE ID            07613          SAMPLE PRODUCT TYPE (CLEAN,RAW)  RAW
SAMPLE PRODUCT ID   SP1            SAMPLE WEIGHT (KG)                -----
FRACTION SIZE      FRACTION SIZE  CUTPOINT  YIELD/FRACTION%  YIELD/FRACTION%
FROM (MM)          TO (MM)
50.00              0.00          -----  -----  100.00
-----
-----
-----
-----
-----
-----
TOTAL YIELD  100.00

```

-NOTES-

```

GCRI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85042
=====
SAMPLE ID            07613          DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID     HD1            DATE ANALYSED  24/09/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)              50.00
SURFACE MOISTURE %        -----  TOTAL SULPHUR %          0.46
TOTAL MOISTURE %          -----  PHOSPHOROUS %           -----
EQUILIBRIUM MOISTURE %   -----  CHLORINE (PPM)          -----
RESIDUAL MOISTURE %      2.99          SPECIFIC GRAVITY        1.58
ASH %                     22.92         FSI                      -----
VOLATILE MATTER %        6.80          HGI                      52.0
FIXED CARBON %           67.29         CO2 %                    -----

GROSS CALORIFIC VALUE (MJ/KG)  25.36
NET CALORIFIC VALUE (MJ/KG)   -----

```

```

GCRI COAL DIVISION  ULTIMATE  PROJ  KPN  BLK  LR  DS  TRC85042
=====
SAMPLE ID            07613          DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SAMPLE PRODUCT ID   SP1            DATE ANALYSED  26/11/85
SPLIT SAMPLE ID     UL1
ANALYSIS BASIS TYPE (DAF,DB,AD)  AD

WATER %                2.99
CARBON %               69.31
HYDROGEN %             1.99
SULPHUR %              0.46
NITROGEN %             0.85
ASH %                  22.92
OXYGEN %               1.48

```

GCRI COAL DIVISION ASH FUSION PROJ KPN BLK LR DS TRC85042
=====

SAMPLE ID 07613
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AF1 DATE ANALYSED 26/11/85

OXIDIZING ATMOSPHERE

INITIAL TEMP.(C) 1278.0
SOFTENING TEMP.(C) 1426.0
HEMISPHERICAL TEMP.(C) 1448.0
FLUID TEMP.(C) 1472.0

REDUCING ATMOSPHERE

INITIAL TEMP.(C) 1208.0
SOFTENING TEMP.(C) 1348.0
HEMISPHERICAL TEMP.(C) 1381.0
FLUID TEMP.(C) 1472.0

NORMAL RANGES ALL TEMPS.
1000.0 >= VALUES <= 1500.0
OXIDATION TEMPS >= REDUCTION TEMPS

GCRI COAL DIVISION ASH MINERAL PROJ KPN BLK LR DS TRC85042
=====

SAMPLE ID 07613
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AM1 DATE ANALYSED 26/11/85

SILICON DIOXIDE %	(SI02)	54.86
ALUMINIUM OXIDE %	(AL2O3)	24.43
FERRIC OXIDE %	(FE2O3)	6.66
TITANIUM DIOXIDE %	(TI02)	1.11
PHOSPHOROUS PENTOXIDE %	(P2O5)	0.57
CALCIUM OXIDE %	(CAO)	2.25
MAGNESIUM OXIDE %	(MGO)	3.25
SULPHUR TRIOXIDE %	(SO3)	1.71
SODIUM OXIDE %	(NA2O)	1.50
POTASSIUM OXIDE %	(K2O)	1.39

90.0 <= TOTAL <= 100.0

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPNLRTRC85042 SEAM - I

SAMPLE ID - 7613

WASHABILITY ID - WA1

----- ANALYSIS TYPE - FLOAT -----

FRACTION SIZE(MM)		50.00 X 6.00		RELATIVE WEIGHT % - 37.64				ASH % - 27.59						
SG-TME	ELEMENTAL	CUM.	FLOATS	CUM.	SINKS	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.			
WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
1.40	0.24	1.08	0.24	1.08	99.76	27.59							0.86	0.86
1.45	4.09	3.47	4.33	3.34	95.67	28.62							1.30	1.28
1.50	27.90	7.47	32.23	6.91	67.77	37.32							2.17	2.05
1.60	28.13	14.06	60.36	10.24	39.64	53.83							2.11	2.08
1.70	11.05	26.21	71.41	12.72	28.59	64.51							1.51	1.99
1.80	4.39	37.10	75.80	14.13	24.20	69.48							1.54	1.96
2.00	4.32	50.70	80.12	16.10	19.88	73.56							1.37	1.93
2.60	19.88	73.56	100.00	27.52									2.05	1.96

----- ANALYSIS TYPE - FLOAT -----

FRACTION SIZE(MM)		6.00 X 0.60		RELATIVE WEIGHT % - 43.90				ASH % - 17.89						
SG-TME	ELEMENTAL	CUM.	FLOATS	CUM.	SINKS	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.			
WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
1.40	0.39	3.10	0.39	3.10	99.61	17.88							0.75	0.75
1.45	16.71	2.63	17.10	2.64	82.90	20.95							0.87	0.87
1.50	29.06	5.58	46.16	4.49	53.84	29.24							1.45	1.23
1.60	24.04	10.98	70.20	6.71	29.80	43.98							1.77	1.42
1.70	9.88	19.28	80.08	8.26	19.92	56.23							2.46	1.55
1.80	5.08	26.07	85.16	9.33	14.84	66.55							3.63	1.67
2.00	4.08	39.35	89.24	10.70	10.76	76.87							3.14	1.74
2.60	10.76	76.87	100.00	17.82									1.98	1.76

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPNLRTRC85042 SEAM - I

SAMPLE ID - 7613

WASHABILITY ID - WA1

----- ANALYSIS TYPE - FLOAT -----

FRACTION SIZE(MM)		0.60 X 0.15		RELATIVE WEIGHT % - 11.87				ASH % - 20.11							
ELEMENTAL		CUM. FLOATS		CUM.	SINKS	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.	CUM.			
SG-TME	WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
1.40	4.47	2.67	4.47	2.67	95.53	20.30								0.78	0.78
1.45	14.65	2.96	19.12	2.89	80.88	23.44								0.65	0.68
1.50	17.12	4.17	36.24	3.50	63.76	28.62								1.32	0.98
1.60	22.74	6.93	58.98	4.82	41.02	40.64								1.63	1.23
1.70	11.52	13.92	70.50	6.31	29.50	51.08								3.05	1.53
1.80	9.22	19.98	79.72	7.89	20.28	65.22								3.49	1.76
2.00	4.44	33.79	84.16	9.25	15.84	74.03								2.99	1.82
2.60	15.84	74.03	100.00	19.52										1.20	1.72

----- ANALYSIS TYPE - FROTH -----

FRACTION SIZE(MM)		0.15 X 0.00		RELATIVE WEIGHT % - 6.59				ASH % - 23.63							
ELEMENTAL		CUM. FLOATS		CUM.	SINKS	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.	CUM.			
SG-TME	WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
240.00	*****	23.63	100.00	23.63										3.16	3.16

GCRI COAL DIVISION		SAMPLE PRODUCT	PROJ	KPN	BLK	LR	DS	TRC85043
SAMPLE ID	07614	SAMPLE PRODUCT TYPE (CLEAN,RAW)		RAW				
SAMPLE PRODUCT ID	SP1	SAMPLE WEIGHT (KG)		---				
FRACTION SIZE FROM (MM)	FRACTION SIZE TO (MM)	CUTPOINT	YIELD/FRACTION%		YIELD/FRACTION% RELATIVE TO TOTAL SAMPLE			
50.00	0.00	---	---		100.00			
---	---	---	---		---			
---	---	---	---		---			
---	---	---	---		---			
---	---	---	---		---			
							TOTAL YIELD	100.00

-NOTES-

GCRI COAL DIVISION		HEAD	PROJ	KPN	BLK	LR	DS	TRC85043
SAMPLE ID	07614	DATA TYPE (REAL,BORO,AVER,CALC)		REAL				
SPLIT SAMPLE ID	HD1	DATE ANALYSED		26/11/85				
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)		ASTM		ANALYSIS BASIS TYPE (AD,DB,AR,EM)		AD		
TOP SIZE (MM)	---		TOTAL SULPHUR %		0.47			
URFACE MOISTURE %	---		PHOSPHOROUS %		---			
TOTAL MOISTURE %	---		CHLORINE (PPM)		---			
EQUILIBRIUM MOISTURE %	---		SPECIFIC GRAVITY		1.44			
RESIDUAL MOISTURE %	4.34		FSI		---			
ASH %	14.74		HGI		48.0			
VOLATILE MATTER %	6.42		CO2 %		---			
FIXED CARBON %	74.50							
GROSS CALORIFIC VALUE (MJ/KG)		29.65						
NET CALORIFIC VALUE (MJ/KG)		---						

GCRI COAL DIVISION		ULTIMATE	PROJ	KPN	BLK	LR	DS	TRC85043
SAMPLE ID	07614	DATA TYPE (REAL,BORO,AVER,CALC)		REAL				
SAMPLE PRODUCT ID	SP1	DATE ANALYSED		26/11/85				
SPLIT SAMPLE ID	UL1	ANALYSIS BASIS TYPE (DAF,DB,AD)		AD				
WATER	%	4.34						
CARBON	%	76.48						
HYDROGEN	%	2.00						
SULPHUR	%	0.47						
NITROGEN	%	0.82						
ASH	%	14.74						
OXYGEN	%	1.15						

GRI COAL DIVISION ASH FUSION PROJ KPN BLK LR DS TRC85043
=====

SAMPLE ID 07614
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AF1 DATE ANALYSED 26/11/85

OXIDIZING ATMOSPHERE
XXXXXXXXXXXXXXXXXXXX

INITIAL TEMP.(C) 1421.0
SOFTENING TEMP.(C) 1472.0
HEMISPHERICAL TEMP.(C) 1472.0
FLUID TEMP.(C) 1472.0

REDUCING ATMOSPHERE
XXXXXXXXXXXXXXXXXXXX

INITIAL TEMP.(C) 1268.0
SOFTENING TEMP.(C) 1416.0
HEMISPHERICAL TEMP.(C) 1439.0
FLUID TEMP.(C) 1472.0

NORMAL RANGES ALL TEMPS.
1000.0 >= VALUES <= 1500.0
OXIDATION TEMPS >= REDUCTION TEMPS

GRI COAL DIVISION ASH MINERAL PROJ KPN BLK LR DS TRC85043
=====

SAMPLE ID 07614
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AM1 DATE ANALYSED 26/11/85

SILICON DIOXIDE %	(SI02)	59.16
ALUMINIUM OXIDE %	(AL2O3)	24.56
FERRIC OXIDE %	(FE2O3)	4.07
TITANIUM DIOXIDE %	(TI02)	1.28
PHOSPHOROUS PENTOXIDE %	(P2O5)	1.73
CALCIUM OXIDE %	(CAO)	1.77
MAGNESIUM OXIDE %	(MGO)	1.71
SULPHUR TRIOXIDE %	(SO3)	0.24
SODIUM OXIDE %	(NA2O)	1.65
POTASSIUM OXIDE %	(K2O)	1.44

90.0 <= TOTAL <= 100.0


```

GCRI COAL DIVISION HEAD      PROJ KPN      BLK LR      DS TRC85044
=====
SAMPLE ID          07615      DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID   HD1        DATE ANALYSED 26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)          -----
SURFACE MOISTURE %     -----
TOTAL MOISTURE %       -----
EQUILIBRIUM MOISTURE % -----
RESIDUAL MOISTURE %    3.70
ASH %                  16.92
VOLATILE MATTER %      6.87
FIXED CARBON %         72.51

TOTAL SULPHUR %        0.44
PHOSPHOROUS %         -----
CHLORINE (PPM)        -----
SPECIFIC GRAVITY       -----
FSI                    -----
HGI                    -----
CO2 %                  -----

GROSS CALORIFIC VALUE (MJ/KG) 27.22
NET CALORIFIC VALUE (MJ/KG)  -----

```

```

GCRI COAL DIVISION SIZE      PROJ KPN      BLK LR      DS TRC85044
=====
SAMPLE ID          07615      DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID   SZ1        DATE ANALYSED 10/10/85
FRACTION SIZE     WT%      ASH%      FSI      CAL      RM      VM      TS
FROM (MM) TO (MM) (MJ/KG)
50.00  6.00  56.51  15.61  -----  -----  5.08  -----  -----
6.00   0.00  43.49  18.11  -----  -----  4.57  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----  -----

```

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPNLRTRC85044 SEAM - I

SAMPLE ID - 7615

WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT														
FRACTION SIZE(MM)		50.00 X		6.00		RELATIVE WEIGHT % -		56.51		ASH % - 15.61				
SG-TME	ELEMENTAL	CUM.	FLOATS	CUM.	SINKS	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.			
WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
1.45	0.51	5.07	0.51	5.07	99.49	16.21							2.17	2.17
1.50	21.43	4.26	21.94	4.28	78.06	19.49							2.95	2.93
1.60	56.82	9.29	78.76	7.89	21.24	46.77							3.11	3.06
2.60	21.24	46.77	100.00	16.15									2.35	2.91

```

GCRI COAL DIVISION HEAD PROJ KPN BLK LR DS TRC85045
=====
SAMPLE ID 07616 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID HD1 DATE ANALYSED 26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM) -----
SURFACE MOISTURE % ----- TOTAL SULPHUR % 0.49
TOTAL MOISTURE % ----- PHOSPHOROUS % -----
EQUILIBRIUM MOISTURE % ----- CHLORINE (PPM) -----
SPECIFIC GRAVITY -----
RESIDUAL MOISTURE % 2.83 FSI -----
ASH % 17.33 HGI -----
VOLATILE MATTER % 7.58 CO2 % -----
FIXED CARBON % 72.26

GROSS CALORIFIC VALUE (MJ/KG) 27.46
NET CALORIFIC VALUE (MJ/KG) -----

```

```

GCRI COAL DIVISION SIZE PROJ KPN BLK LR DS TRC85045
=====
SAMPLE ID 07616 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID SZ1 DATE ANALYSED 10/10/85
FRACTION SIZE WT% ASH% FSI CAL RM VM TS
FROM (MM) TO (MM) (MJ/KG)
50.00 6.00 60.25 14.51 ----- 3.72 -----
6.00 0.00 39.75 20.33 ----- 2.97 -----
-----

```

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPRLRTRC85046 SEAM - I

SAMPLE ID - 7617

WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT														
FRACTION SIZE(MM)		50.00 X		6.00		RELATIVE WEIGHT % - 57.27					ASH % - 16.88			
SG-TME	ELEMENTAL	CUM.	FLOATS	CUM.	SINKS	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.	CUM.		
WT%	WT%	WT%	WT%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
1.45	11.69	4.20	11.69	4.20	88.31	18.42							1.09	1.09
1.50	45.88	6.67	57.57	6.17	42.43	31.12							1.81	1.66
1.60	20.84	11.76	78.41	7.65	21.59	49.81							2.58	1.91
2.60	21.59	49.81	100.00	16.76									1.38	1.79


```

GCRI COAL DIVISION  HEAD      PROJ  KPN      BLK  LR      DS  TRC85048
=====
SAMPLE ID           07632      DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    HD1        DATE ANALYSED  26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)      ----*--
SURFACE MOISTURE %  ---*--
TOTAL MOISTURE %   ---*--
EQUILIBRIUM MOISTURE %  ---*--

RESIDUAL MOISTURE %  4.30
ASH %               29.57
VOLATILE MATTER %   5.66
FIXED CARBON %     60.47

TOTAL SULPHUR %    0.40
PHOSPHOROUS %     ---*--
CHLORINE (PPM)    ---*--
SPECIFIC GRAVITY   ---*--
FSI                ---*--
HGI                ---*--
CO2 %              ---*--

GROSS CALORIFIC VALUE (MJ/KG)  22.59
NET CALORIFIC VALUE (MJ/KG)   ---*--

```

```

GCRI COAL DIVISION  SIZE      PROJ  KPN      BLK  LR      DS  TRC85048
=====
SAMPLE ID           07632      DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    SZ1        DATE ANALYSED  09/10/85
FRACTION SIZE      WT%      ASH%      FSI      CAL      RM      VM      TS
FROM (MM) TO (MM) (MJ/KG)
50.00  6.00  70.32  ---*--  ---*--  ---*--  ---*--  ---*--
 6.00  0.00  29.68  32.67  ---*--  ---*--  5.01  ---*--
-----  -----  -----  -----  -----  -----  -----  -----

```

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPnlRTRC85048 SEAM - I

SAMPLE ID - 7632

WASHABILITY ID - WA1

ANALYSIS TYPE - FLOAT

FRACTION SIZE(MM)		50.00 X		6.00		RELATIVE WEIGHT % -		70.32		ASH % -		40.77	
SG-TME	ELEMENTAL	WT%	ASH%	CUM. FLOATS	WT%	ASH%	CUM. FSI	C.V. (MJ/KG)	CUM. S	CUM. S	VOL. VOL.	MOIST	CUM. MOIST
1.45	0.30	4.48	0.30	4.48	99.70	38.80						1.56	1.56
1.50	15.95	4.44	16.25	4.44	83.75	45.34						2.44	2.42
1.60	26.60	12.18	42.85	9.25	57.15	60.78						2.64	2.56
2.60	57.15	60.78	100.00	38.70								2.55	2.55


```

GORI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85049
=====
SAMPLE ID          07636  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID   HD1    DATE ANALYSED 26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)      -----
SURFACE MOISTURE %  -----
TOTAL MOISTURE %   -----
EQUILIBRIUM MOISTURE % -----
RESIDUAL MOISTURE % 4.26
ASH %              18.79
VOLATILE MATTER %  6.20
FIXED CARBON %     70.75

TOTAL SULPHUR %    0.49
PHOSPHOROUS %     -----
CHLORINE (PPM)    -----
SPECIFIC GRAVITY  -----
FSI                -----
HGI                -----
CO2 %              -----

GROSS CALORIFIC VALUE (MJ/KG) 26.67
NET CALORIFIC VALUE (MJ/KG)  -----

```

```

GORI COAL DIVISION  SIZE  PROJ  KPN  BLK  LR  DS  TRC85049
=====
SAMPLE ID          07636  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID   SZ1    DATE ANALYSED 09/10/85
FRACTION SIZE     WT%   ASH%   FSI   CAL   RM   VM   TS
FROM (MM) TO (MM) (MJ/KG)
50.00  6.00  66.75  -----  -----  -----  -----  -----
6.00   0.00  33.25  20.42  -----  4.41  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----

```



```

GCRI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85050
=====
SAMPLE ID          07638  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID   HD1    DATE ANALYSED  26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)      ----*---
SURFACE MOISTURE %  ----*---          TOTAL SULPHUR %      ----*---
TOTAL MOISTURE %   ----*---          PHOSPHOROUS %      ----*---
EQUILIBRIUM MOISTURE %  ----*---        CHLORINE (PPM)     ----*---
RESIDUAL MOISTURE %  4.22          SPECIFIC GRAVITY   ----*---
ASH %              29.96          FSI                ----*---
VOLATILE MATTER %  ----*---          HGI                ----*---
FIXED CARBON %     ----*---          CO2 %              ----*---

GROSS CALORIFIC VALUE (MJ/KG)  ----*---
NET CALORIFIC VALUE (MJ/KG)   ----*---

```

```

GCRI COAL DIVISION  SIZE  PROJ  KPN  BLK  LR  DS  TRC85050
=====
SAMPLE ID          07638  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID   SZ1    DATE ANALYSED  09/10/85
FRACTION SIZE     WT%    ASH%    FSI    CAL    RM    VM    TS
FROM (MM) TO (MM) (MJ/KG)
50.00  6.00  54.55  ----*---  ----*---  ----*---  ----*---  ----*---
6.00   0.00  45.45  30.17  ----*---  3.92  ----*---  ----*---
----*---  ----*---  ----*---  ----*---  ----*---  ----*---  ----*---  ----*---
----*---  ----*---  ----*---  ----*---  ----*---  ----*---  ----*---  ----*---
----*---  ----*---  ----*---  ----*---  ----*---  ----*---  ----*---  ----*---

```

```

GCRI COAL DIVISION HEAD      PROJ KPN   BLK LR   DS TRC85050
=====
SAMPLE ID          07639      DATA TYPE (REAL,BORG,AVER,CALC) REAL
SPLIT SAMPLE ID   HD1        DATE ANALYSED 26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)          -----
SURFACE MOISTURE %    -----
TOTAL MOISTURE %      -----
EQUILIBRIUM MOISTURE % -----
RESIDUAL MOISTURE %   5.02
ASH %                 22.80
VOLATILE MATTER %    -----
FIXED CARBON %       -----

TOTAL SULPHUR %      -----
PHOSPHOROUS %       -----
CHLORINE (PPM)      -----
SPECIFIC GRAVITY     -----
FSI                  -----
HGI                  -----
CO2 %                -----

GROSS CALORIFIC VALUE (MJ/KG) -----
NET CALORIFIC VALUE (MJ/KG)  -----

```

```

GCRI COAL DIVISION SIZE      PROJ KPN   BLK LR   DS TRC85050
=====
SAMPLE ID          07639      DATA TYPE (REAL,BORG,AVER,CALC) REAL
SPLIT SAMPLE ID   SZ1        DATE ANALYSED 09/10/85
FRACTION SIZE     WT%      ASH%     FSI      CAL      RM      VM      TS
FROM (MM) TO (MM) (MJ/KG)
50.00  6.00    40.75    -----
6.00   0.00    59.25    20.18    -----
-----

```



```

GCRI COAL DIVISION  SAMPLE PRODUCT  PROJ  KPN  BLK  LR  DS  TRC85050
=====
SAMPLE ID           0_____  SAMPLE PRODUCT TYPE (CLEAN,RAW)  RAW
SAMPLE PRODUCT ID  SP1  SAMPLE WEIGHT (KG)  ---.---
  FRACTION SIZE  FRACTION SIZE  CUTPOINT  YIELD/FRACTION%  YIELD/FRACTION%
    FROM (MM)    TO (MM)          .          .          RELATIVE TO
                                TOTAL SAMPLE
      50.00      0.00      ---.---      ---.---      100.00
    ---.---      ---.---      ---.---      ---.---      ---.---

```

```

GCRI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85050
=====
SAMPLE ID           0_____  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    HD1  DATE ANALYSED  26/11/85
                                ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)      ---.---
SURFACE MOISTURE %  ---.---  TOTAL SULPHUR %  0.39
TOTAL MOISTURE %   ---.---  PHOSPHOROUS %   ---.---
EQUILIBRIUM MOISTURE %  ---.---  CHLORINE (PPM)  ---.---
                                SPECIFIC GRAVITY  1.51
RESIDUAL MOISTURE %  5.06  FSI  ---.---
ASH %  19.40  HGI  49.0
VOLATILE MATTER %  8.21  CO2 %  ---.---
FIXED CARBON %  67.33

GROSS CALORIFIC VALUE (MJ/KG)  25.40
NET CALORIFIC VALUE (MJ/KG)  ---.---

```

```

GCRI COAL DIVISION  ULTIMATE  PROJ  KPN  BLK  LR  DS  TRC85050
=====
SAMPLE ID           0_____  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SAMPLE PRODUCT ID  SP1  DATE ANALYSED  26/11/85
SPLIT SAMPLE ID    UL1

ANALYSIS BASIS TYPE (DAF,DB,AD)  AD

WATER %  5.06
CARBON %  68.04
HYDROGEN %  2.02
SULPHUR %  0.39
NITROGEN %  0.84
ASH %  19.40
OXYGEN %  4.25

```

GCRI COAL DIVISION ASH FUSION PROJ KPN BLK LR DS TRC85050
=====

SAMPLE ID 0_-----
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AF1 DATE ANALYSED 26/11/85

OXIDIZING ATMOSPHERE

INITIAL TEMP.(C) 1311.0
SOFTENING TEMP.(C) 1386.0
HEMISPHERICAL TEMP.(C) 1423.0
FLUID TEMP.(C) 1442.0

REDUCING ATMOSPHERE

INITIAL TEMP.(C) 1230.0
SOFTENING TEMP.(C) 1343.0
HEMISPHERICAL TEMP.(C) 1381.0
FLUID TEMP.(C) 1431.0

NORMAL RANGES ALL TEMPS.
1000.0 >= VALUES <= 1500.0
OXIDATION TEMPS >= REDUCTION TEMPS

GCRI COAL DIVISION ASH MINERAL PROJ KPN BLK LR DS TRC85050
=====

SAMPLE ID 0_-----
SAMPLE PRODUCT ID SP1 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID AM1 DATE ANALYSED 26/11/85

SILICON DIOXIDE %	(SI02)	56.32
ALUMINIUM OXIDE %	(AL2O3)	24.56
FERRIC OXIDE %	(FE2O3)	6.45
TITANIUM DIOXIDE %	(TI02)	1.08
PHOSPHOROUS PENTOXIDE %	(P2O5)	0.69
CALCIUM OXIDE %	(CAO)	2.13
MAGNESIUM OXIDE %	(MGO)	2.87
SULPHUR TRIOXIDE %	(SO3)	0.28
SODIUM OXIDE %	(NA2O)	1.93
POTASSIUM OXIDE %	(K2O)	1.37

90.0 <= TOTAL <= 100.0

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPNLRTRC85050 SEAM - I

SAMPLE ID - 7639

WASHABILITY ID - WA1

----- ANALYSIS TYPE - FLOAT -----													
FRACTION SIZE(MM)		50.00 X		6.00		RELATIVE WEIGHT % - 40.75 ASH % - 27.91							
SG-TME	ELEMENTAL	CUM.	FLOATS	CUM.	SINKS	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.	MOIST	MOIST
WT%	WT%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST
1.45	0.94	9.06	0.94	9.06	99.06	28.92						3.33	3.33
1.50	3.39	3.62	4.33	4.80	95.67	29.81						3.75	3.66
1.60	37.63	14.89	41.96	13.85	58.04	39.49						3.47	3.49
2.60	58.04	39.49	100.00	28.73								3.56	3.53


```

GCRI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85051
=====
SAMPLE ID           07642  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    HD1    DATE ANALYSED  26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)      -----
SURFACE MOISTURE %  -----
TOTAL MOISTURE %   -----
EQUILIBRIUM MOISTURE %  -----
RESIDUAL MOISTURE %  4.36
ASH %              10.28
VOLATILE MATTER %  6.77
FIXED CARBON %     78.59

TOTAL SULPHUR %    0.49
PHOSPHOROUS %     -----
CHLORINE (PPM)    -----
SPECIFIC GRAVITY  -----
FSI                -----
HGI                -----
CO2 %              -----

GROSS CALORIFIC VALUE (MJ/KG)  29.39
NET CALORIFIC VALUE (MJ/KG)  -----

```

```

GCRI COAL DIVISION  SIZE  PROJ  KPN  BLK  LR  DS  TRC85051
=====
SAMPLE ID           07642  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    SZ1    DATE ANALYSED  09/10/85
FRACTION SIZE      WT%   ASH%   FSI   CAL   RM   VM   TS
FROM (MM) TO (MM) (MJ/KG)
50.00  6.00  49.75  -----  -----  -----  -----  -----
6.00  0.00  50.25  11.63  -----  5.28  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----

```

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPNLRTRC85051 SEAM - I

SAMPLE ID - 7641

WASHABILITY ID - WA1

----- ANALYSIS TYPE - FLOAT -----														
FRACTION SIZE(MM)		50.00 X		6.00		RELATIVE WEIGHT % - 47.54 ASH % - 19.81								
SG-TME	ELEMENTAL	CUM.	FLOATS	CUM.	SINKS	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.	MOIST	CUM.	
WT%	ASH%	WT%	ASH%	WT%	ASH%	FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	
1.45	3.97	4.11	3.97	4.11	96.03	20.20							2.59	2.59
1.50	41.90	6.41	45.87	6.21	54.13	30.88							3.37	3.30
1.60	28.26	12.63	74.13	8.66	25.87	50.82							3.42	3.35
2.60	25.87	50.82	100.00	19.57									2.68	3.17


```

GCRI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85052
=====
SAMPLE ID           07643  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    HD1    DATE ANALYSED  26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)      -----
SURFACE MOISTURE %  -----
TOTAL MOISTURE %   -----
EQUILIBRIUM MOISTURE %  -----

RESIDUAL MOISTURE %  1.41
ASH %               28.32
VOLATILE MATTER %   6.91
FIXED CARBON %     63.36

TOTAL SULPHUR %    0.41
PHOSPHOROUS %     -----
CHLORINE (PPM)    -----
SPECIFIC GRAVITY  -----
FSI               -----
HGI              -----
CO2 %            -----

GROSS CALORIFIC VALUE (MJ/KG)  23.07
NET CALORIFIC VALUE (MJ/KG)  -----

```

```

GCRI COAL DIVISION  SIZE  PROJ  KPN  BLK  LR  DS  TRC85052
=====
SAMPLE ID           07643  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    SZ1    DATE ANALYSED  10/10/85
FRACTION SIZE      WT%   ASH%   FSI   CAL   RM   VM   TS
FROM (MM) TO (MM) (MJ/KG)
50.00  6.00  62.12  27.24  -----  2.22  -----  -----
6.00  0.00  37.88  29.06  -----  1.47  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----

```



```

GCRI COAL DIVISION  HEAD  PROJ  KPN  BLK  LR  DS  TRC85052
=====
SAMPLE ID           07645  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    HD1    DATE ANALYSED  26/11/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM)  AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO)  ASTM

TOP SIZE (MM)      -----
SURFACE MOISTURE %  -----
TOTAL MOISTURE %   -----
EQUILIBRIUM MOISTURE % -----
RESIDUAL MOISTURE %  3.21
ASH %              10.59
VOLATILE MATTER %  7.69
FIXED CARBON %     78.51

TOTAL SULPHUR %    0.49
PHOSPHOROUS %     -----
CHLORINE (PPM)    -----
SPECIFIC GRAVITY  -----
FSI               -----
HGI               -----
CO2 %             -----

GROSS CALORIFIC VALUE (MJ/KG)  29.45
NET CALORIFIC VALUE (MJ/KG)    -----

```

```

GCRI COAL DIVISION  SIZE  PROJ  KPN  BLK  LR  DS  TRC85052
=====
SAMPLE ID           07645  DATA TYPE (REAL,BORO,AVER,CALC)  REAL
SPLIT SAMPLE ID    SZ1    DATE ANALYSED  10/10/85
FRACTION SIZE      WT%   ASH%   FSI   CAL   RM   VM   TS
FROM (MM) TO (MM) (MJ/KG)
50.00  6.00  58.13  7.78  -----  4.04  -----  -----
6.00  0.00  41.87  13.33  -----  3.19  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----
-----  -----  -----  -----  -----  -----  -----  -----

```

GULF CANADA RESOURCES INC. - COAL DIVISION

DEC 12/85

WASHABILITY REPORT 2

PAGE -

DATA SOURCE - KPMLRTRC85052 SEAM - I

SAMPLE ID - 7643

WASHABILITY ID - WA1

----- ANALYSIS TYPE - FLOAT -----																
FRACTION	SIZE(MM)	50.00 X 6.00		CUM. FLOATS		CUM. SINKS		RELATIVE WEIGHT % - 62.12 ASH % - 27.21								
SG-TME	ELEMENTAL	WT%	ASH%	WT%	ASH%	WT%	ASH%	CUM.	C.V.	CUM.	CUM.	CUM.	CUM.			
								FSI	FSI (MJ/KG)	C.V.	S	S	VOL.	VOL.	MOIST	MOIST
1.45	3.21	4.27		3.21	4.27	96.79	27.83								1.39	1.39
1.50	31.30	8.15		34.51	7.79	65.49	37.24								1.68	1.65
1.60	35.78	14.99		70.29	11.45	29.71	64.03								1.93	1.79
2.60	29.71	64.03		100.00	27.07										1.98	1.85

MT. KLAPPAN 85A

LOST-FOX AREA

APPENDIX IV VOL II

DIAMOND DRILLHOLE COAL
QUALITY (CONFIDENTIAL DATA
REMOVED)

KPNLR00H 85021 TO

KPNLR00H 85026

707

- DATA SOURCE SUMMARY -

DATA SOURCE - KPMLRDDH85021

DATE - 01/09/86

- HISTORY -

START DATE - 07/24/85

END DATE - 07/27/85

CONTRACTOR - J T THOMAS

GEOLOGIST - BARKER

OPERATOR - GCRI

SURVEYOR - MWG & ASS

REMARKS -

- LOCATION -

PROVINCE - BC

ELEVATION - 1540.40

LICENCE/LEASE NUMBER - 7170

ZONE - 9

NORTHING - 6345237.00

EASTING - 505628.25

LATITUDE - 571507

LONGITUDE - 1285424

- ORIENTATION -

LENGTH - 165.28

CORE SIZE - 0.0

CEMENT -

PLUG -

PIEZ -

INCLINATION - 80.0

AZIMUTH - 120.0

CASING DEPTH (M) - 4.80

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

17/DEC/85 GULF CANADA RESOURCES INC. - COAL DIVISION
 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL - ROCK
DDH85021		6572	32.02	32.18	100.00		0.147			0.000- 0.147
	I	6573	32.18	33.89	51.46	0.815	0.019	0.482	0.295	1.297- 0.314
	I	6574	33.89	34.32	100.00		0.416			0.000- 0.416
		6575	38.27	40.00	96.53		1.618		0.058	0.000- 1.676
	H	6576	40.00	41.59	100.00	1.544				1.544- 0.000
	H	6577	41.59	45.03	77.03	1.901	0.681	0.603	0.165	2.504- 0.846
	H	6578	45.03	45.70	53.73	0.351		0.303		0.654- 0.000
		6579	45.70	46.36	100.00		0.645			0.000- 0.645
		6580	123.27	124.40	100.00		1.081			0.000- 1.081
	F	6581	124.40	125.44	69.23	0.679		0.302		0.981- 0.000
	F	6582	125.44	127.17	86.13	1.200	0.177	0.223		1.423- 0.177
	F	6583	127.17	128.11	97.87	0.735	0.100		0.018	0.735- 0.118
		6584	128.11	128.80	100.00		0.617			0.000- 0.617
		6585	149.02	150.22	100.00		1.088			0.000- 1.088
	E	6586	150.22	152.19	57.87	1.030	0.018	0.766		1.796- 0.018
		6587	152.19	152.60	100.00		0.382			0.000- 0.382

18/DEC/85

GULF CANADA RESOURCES INC. - COAL DIVISION

COMPOSITE SAMPLE SUMMARY

PAGE 1

APPARENT THICKNESS

KLAPPAN 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	TOTAL ROCK
DDH85021													
	I	83	6573	6573	32.18	33.89	51.46	0.86	0.02	0.52	0.31	1.38	0.33
	H	84	6576	6578	40.00	45.70	80.70	3.90	0.70	0.93	0.17	4.83	0.87
	F	85	6581	6583	124.40	128.11	84.36	2.83	0.30	0.56	0.02	3.39	0.32
	E	86	6586	6586	150.22	152.19	57.86	1.12	0.02	0.83	0.00	1.95	0.02

COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES

GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK

DDH85022		6562	48.31	49.04	100.00		0.719			0.000	0.719
	I	6563	49.04	50.55	81.46	1.050	0.157	0.275		1.325	0.157
	I	6564	50.55	52.00	91.72	1.267	0.029	0.116		1.383	0.029
	I	6565	52.00	53.87	100.00	1.796				1.796	0.000
		6566	53.87	54.25	100.00		0.361			0.000	0.361
	H	6567	90.19	90.46	74.07	0.124	0.067		0.067	0.124	0.134
	H	6568	90.46	91.40	100.00	0.906				0.906	0.000
	H	6569	91.40	92.59	100.00	0.799	0.362			0.799	0.362
	H	6570	92.59	94.20	81.99	1.233	0.069	0.148	0.139	1.381	0.208
		6571	94.20	94.68	100.00		0.476			0.000	0.476

GULF CANADA RESOURCES INC. - COAL DIVISION
 18/DEC/85 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN 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
DDH85022												
	I	87	6563	6565	49.04	53.87	91.71	4.24	0.19	0.40	0.00	4.64 - 0.19
	H	88	6568	6570	90.46	94.20	92.24	3.01	0.44	0.15	0.14	3.16 - 0.58

COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH85023

DATE - 01/10/86

- HISTORY -

START DATE - 07/23/85

END DATE - 07/30/85

CONTRACTOR - J T THOMAS

GEOLOGIST - BARKER

OPERATOR - GCRI

SURVEYOR - MWG & ASS

REMARKS -

- LOCATION -

PROVINCE - BC
ELEVATION - 1741.60

LICENCE/LEASE NUMBER - 7151

ZONE - 9
NORTHING - 6344164.00
EASTING - 506616.94

LATITUDE - 571433
LONGITUDE - 1285325

- ORIENTATION -

LENGTH - 299.08
CORE SIZE - 0.0

INCLINATION - 60.0
AZIMUTH - 45.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 6.10
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
DDH85023	M UPRIGHT	5151	288.42	290.26	92.93	1.202	0.483	0.128		1.330- 0.483
		5152	290.26	290.53	100.00		0.266			0.000- 0.266
		6718	26.68	26.93	100.00		0.211			0.000- 0.211
	K	6719	26.93	28.79	64.52	0.660	0.341	0.268	0.282	0.928- 0.623
	K	6720	28.79	32.42	62.26	1.800		1.118		2.918- 0.000
	K	6721	32.42	34.30	50.00		0.720		0.731	0.000- 1.451
	L	6722	62.46	63.18	100.00		0.537			0.000- 0.537
	L	6723	63.18	66.03	62.11	0.923	0.415	0.174	0.642	1.097- 1.057
	L	6724	66.03	69.04	55.48	1.152	0.171	1.095		2.247- 0.171
		6725	69.04	69.25	100.00		0.147			0.000- 0.147
		6726	124.05	125.84	100.00		0.978			0.000- 0.978
	M	6727	125.84	127.43	18.87	0.020	0.130	0.544	0.121	0.564- 0.251
	M	6728	127.43	129.38	100.00	0.970	0.005			0.970- 0.005
	M	6729	129.38	130.62	81.45	0.009	0.011		0.004	0.009- 0.015
	M	6730	130.62	131.97	100.00	0.419				0.419- 0.000
	M	6731	131.97	133.43	100.00	0.909	0.269			0.909- 0.269
	M	6732	133.43	135.83	37.08	0.297	0.220	0.847		1.144- 0.220
	M	6733	135.83	140.94	100.00	0.594	2.793			0.594- 2.793
	M	6734	140.94	141.44	100.00	0.300	0.170			0.300- 0.170
	M	6735	141.44	145.84	52.05	0.981	0.384	1.663	0.257	2.644- 0.641
		6736	145.84	147.66	100.00		1.666			0.000- 1.666
	M OVERTURNED	6737	213.78	214.32	38.89		0.190		0.279	0.000- 0.469
	M OVERTURNED	6738	214.32	216.03	95.32	0.664	0.775	0.063		0.727- 0.775
	M OVERTURNED	6739	216.03	220.58	82.64	2.652	0.427	0.452	0.199	3.104- 0.626
	M OVERTURNED	6740	220.58	221.29	78.87	0.035	0.460		0.130	0.035- 0.590
	M OVERTURNED	6741	221.29	223.34	78.05	0.961	0.518	0.207	0.216	1.168- 0.734
	M OVERTURNED	6742	223.34	228.72	80.86	3.142	0.885	0.758	0.207	3.900- 1.092
	M OVERTURNED	6743	228.72	229.52	100.00	0.003	0.344			0.003- 0.344

GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 2
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL -	ROCK
	M OVERTURNED	6744	229.52	230.86	32.09	0.353	0.026	0.382	0.382	0.735	0.408
		6745	230.86	232.48	100.00	0.057	1.187			0.057	1.187
		6746	270.32	270.74	100.00		0.333			0.000	0.333
	M UPRIGHT	6747	270.74	273.59	89.82	0.382	0.772	0.242		0.624	0.772
	M UPRIGHT	6748	273.59	276.19	91.92	1.245	0.438	0.125		1.370	0.438
	M UPRIGHT	6749	276.19	284.85	86.49	4.506	2.542	0.795	0.918	5.301	2.860
	M UPRIGHT	6750	284.85	288.42	84.87	2.602	0.396	0.533		3.135	0.396

GULF CANADA RESOURCES INC. - COAL DIVISION
 18/DEC/85 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FRDM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH85023												
	K	89	6719	6720	26.93	32.42	63.02	3.05	0.41	1.69	0.34	4.74- 0.75
	L	90	6723	6724	63.18	69.04	58.70	2.68	0.76	1.57	0.85	4.25- 1.61
	M	91	6727	6731	125.84	133.43	79.97	4.87	1.20	1.05	0.47	5.92- 1.67
	M	92	6734	6735	140.94	145.84	56.93	2.11	0.68	1.84	0.27	3.95- 0.95
	M OVERTURNED	93	6738	6744	214.32	230.86	79.38	9.03	4.10	2.09	1.32	11.12- 5.42
	M UPRIGHT	94	5151	6750	270.74	290.26	88.01	11.53	5.65	2.01	0.33	13.54- 5.98

COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES

GULF CANADA RESOURCES INC.

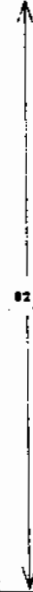
COAL DIVISION MOUNT KLAPPAN PROJECT

TRUE THICKNESS

SEAM DETAIL

DATA SOURCE: KPH LR 00H85023 SEAM: M INTERVAL(M) : 140.94 - 145.84 ELEVATION(M) : 1741.6
 GEOLOGIST : BARKER SCALE: 1:40 DATE : JAN 07/86 DRAWING NO. :

SEAM COMP	DRILL DEPTH <small>(METRES)</small>	COAL SEAM LOG	INTERVAL <small>METRES</small>		% REC.	SAMPLE ID			COAL/ROCK TOTAL		COAL QUALITY A.D.B.								
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	CAL. VAL M/76				
		↑																	
	140.94		0.13																
	141.44		0.17		100.0	6734													
			0.13																
			0.29																
			0.32																
		X																	
			(0.82)																
			(0.26)																
			0.14																
			0.29		41.8	6735													
			0.13																
			0.12																
			0.11																
		X																	
			(1.05)																
	145.84																		
		↓																	



82

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

0.1

GULF CANADA RESOURCES INC.

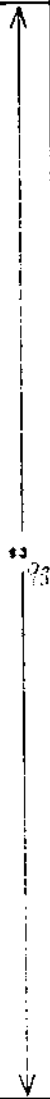
COAL DIVISION MOUNT KLAPPAN PROJECT

TRUE THICKNESS

SEAM DETAIL

DATA SOURCE: KPN LR 00889023 SEAM : M OVERTURNED INTERVAL(M) : 221.29 - 228.72 ELEVATION(M) : 1741.6
 GEOLOGIST : BARKER SCALE: 1:40 DATE : JAN 08/86 DRAWING NO. :

SEAM COMP.	DRILL DEPTH	COAL SEAM LOG	INTERVAL METRES		% REC.	SAMPLE ID			COAL/ROCK TOTAL		COAL QUALITY A.D.B.							
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	KAL VAL NO/KG			
	221.29			0.22														
				0.12														
				0.12														
				0.16														
				0.11														
				0.02	77.6	8741												
				0.34														
				(0.21)														
				(0.22)														
	223.34			(0.38)														
				0.14														
				0.53														
				0.46														
				0.09														
				0.08														
				0.46														
				0.09														
				0.22														
				0.08														
				0.35														
				0.08														
				(0.21)														
				(0.10)	80.7	8742												
				0.16														
				0.27														
				0.04														
				0.10														
				0.15														
				0.02														
				0.17														
				0.59														
				(0.27)														
				0.24														
	228.72																	



93

80.7

0.07 / 1.83

4.89

0.77 41.79 9.80 47.64 0.38 18.77

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH85024

DATE - 01/03/86

- HISTORY -

START DATE - 07/28/85

END DATE - 07/30/85

CONTRACTOR - JT THOMAS

GEOLOGIST - BUHAY

OPERATOR - GCRI

SURVEYOR - MWG & ASS

REMARKS -

- LOCATION -

PROVINCE - BC

ELEVATION - 1709.50

LICENCE/LEASE NUMBER - 7151

ZONE - 9

NORTHING - 6343684.00

EASTING - 506360.25

LATITUDE - 571417

LONGITUDE - 1285341

- ORIENTATION -

LENGTH - 153.60

CORE SIZE - 0.0

CEMENT - N

PLUG - N

PIEZ -

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 3.35

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
DDH85024		6588	10.95	12.68	100.00		1.698			0.000- 1.698
	I	6589	12.68	14.40	81.98	0.883	0.486	0.302		1.185- 0.486
	I	6590	14.40	16.40	56.50	0.143	0.924	0.597	0.225	0.740- 1.149
	I	6591	16.40	18.64	100.00	1.749	0.259			1.749- 0.259
	I	6592	18.64	19.68	53.85	0.200	0.269	0.411		0.611- 0.269
		6593	19.68	19.87	100.00		0.157			0.000- 0.157
		6594	90.93	91.08	100.00		0.144			0.000- 0.144
	H	6595	91.08	92.84	80.11	1.210	0.144	0.336		1.546- 0.144
	H	6596	92.84	94.14	100.00	0.984	0.270			0.984- 0.270
	H	6597	94.14	95.87	100.00	1.546	0.126			1.546- 0.126
		6598	95.87	96.39	100.00		0.504			0.000- 0.504

GULF CANADA RESOURCES INC. - COAL DIVISION
 18/DEC/85 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN 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
DDH85024												
	I	95	6589	6592	12.68	19.68	76.28	3.25	2.09	1.42	0.24	4.67- 2.33
	H	96	6595	6597	91.08	95.87	92.69	3.88	0.56	0.35	0.00	4.23- 0.56

**COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES**

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN LR COM85024 SEAM: INTERVAL(M) : 12.68 - 19.88 ELEVATION(M) : 1709.3
 GEOLOGIST : BUNAY SCALE: DATE : DEC 19/85 DRAWING NO.:

SEAM COMP.	DRILL DEPTH METERS	COAL SEAM LOG	INTERVAL METERS		X REC.	SAMPLE ID			COAL/ROCK TOTAL		COAL QUALITY A.D.B.								
			ROCK	COAL		SIMP	COMP	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	GRAVITY 60/20				
	12.68	↑		0.18															
				0.21															
				(0.30)															
				0.32	21.8	8888													
				0.33															
				0.30															
				0.16															
				0.32															
	14.40			0.38															
				0.14															
				(0.80)	56.3	8880													
				(0.23)															
				0.32															
				0.19															
	16.40			0.27															
				0.18															
				0.86	100.0	8881													
				0.18															
				0.43															
	18.64			(0.41)															
				0.27	33.3	8892													
				0.20															
	19.88	↓																	

98
75
4.28 / 2.18
6.48

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH85025

DATE - 01/09/86

- HISTORY -

START DATE - 07/30/85

END DATE - 07/31/85

CONTRACTOR - J T THOMAS

GEOLOGIST - SAVOIE

OPERATOR - GCRI

SURVEYOR - MWG & ASS

REMARKS -

- LOCATION -

PROVINCE - BC

ELEVATION - 1684.30

LICENCE/LEASE NUMBER - 7151

ZONE - 9

NORTHING - 6343436.00

EASTING - 506419.87

LATITUDE - 571409

LONGITUDE - 1285337

- ORIENTATION -

LENGTH - 111.32

CORE SIZE - 0.0

CEMENT -

PLUG -

PIEZ -

INCLINATION - 90.0

AZIMUTH - 0.0

CASING DEPTH (M) - 3.66

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK

DDH85025		6599	35.08	36.40	100.00		1.320			0.000- 1.320
	I	6600	36.40	37.73	75.94	0.970	0.040	0.320		1.290- 0.040
	I	6601	37.73	39.29	87.82	1.220	0.150		0.190	1.220- 0.340
	I	6602	39.29	40.82	100.00	1.529				1.529- 0.000
		6603	40.82	41.53	100.00		0.709			0.000- 0.709
		6604	73.87	75.74	100.00		1.865			0.000- 1.865
	H	6605	75.74	76.81	100.00	1.038	0.030			1.038- 0.030
	H	6606	76.81	77.81	68.00	0.310	0.370	0.319		0.629- 0.370
	H	6607	77.81	79.47	100.00	1.587	0.070			1.587- 0.070
		6608	79.47	79.99	100.00		0.519			0.000- 0.519

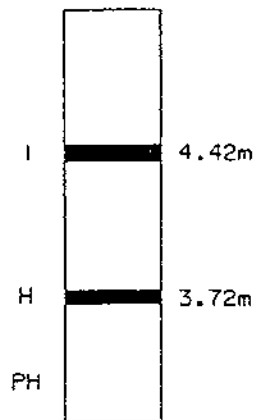
GULF CANADA RESOURCES INC. - COAL DIVISION
 18/DEC/85 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL-ROCK
DDH85025												
	I	97	6600	6602	36.40	40.82	88.46	3.72	0.19	0.32	0.19	4.04 - 0.38
	H	98	6605	6607	75.74	79.47	91.42	2.94	0.47	0.32	0.00	3.26 - 0.47

MT. KLAPPAN COAL PROPERTY

1985 DIAMOND DRILL HOLES DDH85025

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE: SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm COAL.

SCALE: 1:2000

GULF CANADA RESOURCES INC.
15/01/88



COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH85026

DATE - 01/09/86

- HISTORY -

START DATE - 07/31/85
END DATE - 08/01/85

CONTRACTOR - J T THOMAS
GEOLOGIST - BUHAY

OPERATOR - GCRI
SURVEYOR - MWG & ASS

REMARKS -

- LOCATION -

PROVINCE - BC
ELEVATION - 1641.90
LICENCE/LEASE NUMBER - 7151

ZONE - 9
NORTHING - 6343430.00
EASTING - 506857.06
LATITUDE - 571409
LONGITUDE - 1285311

- ORIENTATION -

LENGTH - 90.01
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 0.00
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK

DDH85026		6609	19.42	19.68	100.00		0.256			0.000	0.256
	I	6610	19.68	25.41	14.49	0.714	0.109	3.853	1.001	4.567	1.110
		6611	25.41	25.79	100.00		0.378			0.000	0.378
		6612	62.10	62.60	100.00		0.499			0.000	0.499
	H	6613	62.60	63.51	100.00	0.879	0.030			0.879	0.030
	H	6614	63.51	64.32	49.38	0.180	0.220	0.410		0.590	0.220
	H	6615	64.32	65.53	88.43	0.949	0.120		0.140	0.949	0.260
	H	6616	65.53	66.03	80.00	0.400		0.100		0.500	0.000
		6617	66.03	67.04	100.00		1.009			0.000	1.009

GULF CANADA RESOURCES INC. - COAL DIVISION
 18/DEC/85 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL-ROCK
DDH85026												
	H	99	6613	6616	62.60	66.03	81.04	2.41	0.37	0.51	0.14	2.92- 0.51
	L	6610	6610	6610	19.68	25.41	14.48	0.72	0.11	3.89	1.01	4.61- 1.12

**COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES**

MT. KLAPPAN 85A
LOST-FOX AREA

APPENDIX IV VOL. III

DIAMOND DRILL HOLE COAL
QUALITY (CONFIDENTIAL DATA
REMOVED)

KPNLRDOH 85027 TO
KPNLRDOH 85034

707

===== GULF CANADA RESOURCES INC. =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLR00H85027

DATE - 01/09/86

- HISTORY -

START DATE - 08/01/85

END DATE - 08/03/85

CONTRACTOR - J T THOMAS

GEOLOGIST - BUHAY

OPERATOR - GCRI

SURVEYOR - MWG & ASS

REMARKS -

- LOCATION -

PROVINCE - BC

ELEVATION - 1629.70

LICENCE/LEASE NUMBER - 7147

ZONE - 9

NORTHING - 6343062.00

EASTING - 506959.37

LATITUDE - 571357

LONGITUDE - 1285305

- ORIENTATION -

LENGTH - 275.67

INCLINATION - 90.0

AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT -

PLUG -

PIEZ -

CASING DEPTH (M) - 3.10

AQUIFER DEPTHS (M) - 0.00

0.00

LOST CIRC. DEPTHS (M) - 0.00

0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL	TOTAL ROCK

DDH85027		6621	43.03	44.06	100.00		0.986			0.000	0.986
	O	6622	44.06	44.71	95.38	0.363	0.229		0.029	0.363	0.258
	O	6623	44.71	45.64	88.17	0.780			0.105	0.780	0.105
		6624	45.64	46.00	100.00		0.341			0.000	0.341
		6625	74.74	75.26	100.00		0.469			0.000	0.469
	N	6626	75.26	76.57	100.00	0.962	0.215			0.962	0.215
	N	6627	76.57	77.68	80.18	0.786	0.009	0.196		0.982	0.009
		6628	77.68	78.65	100.00		0.861			0.000	0.861
		6629	92.97	94.32	100.00		1.224			0.000	1.224
	M/N	6630	94.32	95.63	81.68	0.508	0.432	0.211		0.719	0.432
		6631	95.63	95.78	100.00		0.129			0.000	0.129
		6632	108.92	109.24	100.00		0.284			0.000	0.284
	M UPPER	6633	109.24	111.30	100.00	1.811	0.036			1.811	0.036
	M UPPER	6634	111.30	114.88	89.39	0.200	2.740	0.346		0.546	2.740
	M LOWER	6635	114.88	116.16	74.22	0.842	0.047	0.308		1.150	0.047
		6636	116.16	117.05	100.00		0.838			0.000	0.838
		6637	126.92	127.56	100.00		0.596			0.000	0.596
	L	6638	127.56	129.29	94.80	1.422	0.112		0.084	1.422	0.196
		6639	129.29	129.72	83.72		0.338		0.066	0.000	0.404
		6640	147.23	147.78	100.00		0.396			0.000	0.396
	K/L	6641	147.78	148.87	100.00	0.741	0.091			0.741	0.091
	K/L	6642	148.87	150.81	80.93	1.238	0.067	0.186	0.119	1.424	0.186
	K/L	6643	150.81	151.69	100.00	0.302	0.477			0.302	0.477
		6644	151.69	152.62	100.00		0.852			0.000	0.852
		6645	163.48	163.80	100.00		0.309			0.000	0.309
	K	6646	163.80	164.56	80.26	0.437	0.156	0.146		0.583	0.156
	K	6647	164.56	164.91	100.00	0.341				0.341	0.000
		6648	164.91	166.13	100.00		1.201			0.000	1.201

17/DEC/85

GULF CANADA RESOURCES INC. - COAL DIVISION
 SIMPLE SAMPLE SUMMARY
 TRUE THICKNESS
 KLAPPAN PROJECT

PAGE 2

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK
		6649	216.04	216.16	100.00		0.111			0.000-	0.111
I		6650	216.16	218.07	90.58	1.305	0.297	0.166		1.471-	0.297
I		6671	218.07	219.50	78.32	0.981	0.065	0.289		1.270-	0.065
I		6672	219.50	221.55	100.00	1.931				1.931-	0.000
		6673	221.55	222.04	100.00		0.464			0.000-	0.464
		6674	265.07	265.98	100.00		0.887			0.000-	0.887
H		6675	265.98	267.66	85.12	1.373	0.020	0.244		1.617-	0.020
H		6676	267.66	268.29	100.00	0.604	0.010			0.604-	0.010
		6677	268.29	268.70	100.00		0.399			0.000-	0.399

GULF CANADA RESOURCES INC. - COAL DIVISION
 18/DEC/85 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN 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

DDH85027												
	O	100	6622	6623	44.06	45.64	91.13	1.20	0.24	0.00	0.14	1.20- 0.38
	N	101	6626	6627	75.26	77.68	90.90	1.95	0.25	0.22	0.00	2.17- 0.25
	M/N	102	6630	6630	94.32	95.63	81.67	0.58	0.49	0.24	0.00	0.82- 0.49
	M UPPER	103	6633	6633	109.24	111.30	100.00	2.02	0.04	0.00	0.00	2.02- 0.04
	L	104	6638	6638	127.56	129.29	94.79	1.52	0.12	0.00	0.09	1.52- 0.21
	K/L	105	6641	6643	147.78	151.69	90.53	2.80	0.74	0.22	0.15	3.02- 0.89
	K	106	6646	6647	163.80	164.91	86.48	0.80	0.16	0.15	0.00	0.95- 0.16
	I	107	6650	6672	216.16	221.55	90.90	4.51	0.39	0.49	0.00	5.00- 0.39
	H	108	6675	6676	265.98	268.29	89.17	2.03	0.03	0.25	0.00	2.28- 0.03
	M LOWER	6635	6635	6635	114.88	116.16	74.21	0.90	0.05	0.33	0.00	1.23- 0.05

**COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES**

GCRI COAL DIVISION HEAD PROJ KPN BLK LR DS DDH85027
=====

SAMPLE ID 06635 DATA TYPE (REAL,BORO,AVER,CALC) REAL
SPLIT SAMPLE ID HD1 DATE ANALYSED 10/10/85
ANALYSIS BASIS TYPE (AD,DB,AR,EM) AD
NAME OF STANDARD (ASTM,JIS,DIN,BS,AS,GOST,ISO) ASTM

TOP SIZE (MM)	----		
SURFACE MOISTURE %	----	TOTAL SULPHUR %	----
TOTAL MOISTURE %	12.11	PHOSPHOROUS %	----
EQUILIBRIUM MOISTURE %	----	CHLORINE (PPM)	----
		SPECIFIC GRAVITY	----
RESIDUAL MOISTURE %	0.41	FSI	----
ASH %	60.59	HGI	----
VOLATILE MATTER %	----	CO2 %	----
FIXED CARBON %	----		
GROSS CALORIFIC VALUE (MJ/KG)	----		
NET CALORIFIC VALUE (MJ/KG)	----		

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH85028

DATE - 01/09/86

- HISTORY -

START DATE - 08/01/85
END DATE - 08/02/85

CONTRACTOR - J T THOMAS
GEOLOGIST - SAVOIE

OPERATOR - GCRI
SURVEYOR - MWG & ASS

REMARKS -

- LOCATION -

PROVINCE - BC
ELEVATION - 1668.60
LICENCE/LEASE NUMBER - 7151

ZONE - 9
NORTHING - 6343175.00
EASTING - 506256.50
LATITUDE - 571401
LONGITUDE - 1285347

- ORIENTATION -

LENGTH - 79.06
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 3.66
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE



GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED		MISSING		TOTAL	
						COAL	ROCK	COAL	ROCK	COAL	ROCK

DDH85028		6709	10.45	10.80	100.00		0.339			0.000-	0.339
	I	6710	10.80	12.47	35.93	0.455	0.126	0.930	0.107	1.385-	0.233
	I	6711	12.47	15.68	17.45	0.505	0.039	2.576		3.081-	0.039
		6712	15.68	16.58	100.00		0.877			0.000-	0.877
		6713	56.40	56.96	100.00		0.541			0.000-	0.541
	H	6714	56.96	58.08	91.07	0.975	0.010		0.097	0.975-	0.107
	H	6715	58.08	59.43	88.15	0.813	0.338		0.155	0.813-	0.493
	H	6716	59.43	61.18	73.14	1.143	0.096	0.455		1.598-	0.096
	H	6717	61.18	61.96	100.00		0.756			0.000-	0.756

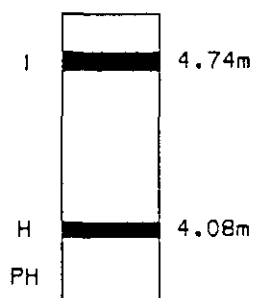
GULF CANADA RESOURCES INC. - COAL DIVISION
 18/DEC/85 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN PROJECT

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
DDH8502B												
	H	109	6714	6716	56.96	61.18	82.70	3.03	0.46	0.47	0.26	3.50- 0.72
	I	111	6710	6711	10.80	15.68	23.77	0.99	0.17	3.61	0.11	4.60- 0.28

MT. KLAPPAN COAL PROPERTY

1985 DIAMOND DRILL HOLES
DDH85028

SEAM	TRUE SEAM THICKNESS (COAL & ROCK)
------	--------------------------------------



NOTE: SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm COAL.

SCALE: 1:2000

GULF CANADA RESOURCES INC.
15/01/86



COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES

----- GULF CANADA RESOURCES INC. -----

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH85029

DATE - 01/09/86

- HISTORY -

START DATE - 08/02/85
END DATE - 08/03/85

CONTRACTOR - J T THOMAS
GEOLOGIST - SAVOIE

OPERATOR - GCRI
SURVEYOR - MWG & ASS

REMARKS -

- LOCATION -

PROVINCE - BC
ELEVATION - 1661.70
LICENCE/LEASE NUMBER - 7151

ZONE - 9
NORTHING - 6343261.00
EASTING - 506523.94
LATITUDE - 571403
LONGITUDE - 1285331

- ORIENTATION -

LENGTH - 104.25
CORE SIZE - 0.0

INCLINATION - 90.0
AZIMUTH - 0.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 13.72
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE



GULF CANADA RESOURCES INC. - COAL DIVISION
 17/DEC/85 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
DDH85029		6618	74.71	75.00	100.00		0.251			0.000- 0.251
	J	6619	75.00	75.53	100.00	0.427				0.427- 0.000
		6620	75.53	76.78	100.00		0.803			0.000- 0.803

GULF CANADA RESOURCES INC. - COAL DIVISION
 18/DEC/85 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN 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
DDH85029	J	6619	6619	6619	75.00	75.53	100.00	0.53	0.00	0.00	0.00	0.53- 0.00

MT. KLAPPAN COAL PROPERTY

1985 DIAMOND DRILL HOLES
DDH85029

SEAM

TRUE SEAM THICKNESS
(COAL & ROCK)

J



NOTE: SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm COAL.

SCALE: 1:2000

GULF CANADA RESOURCES INC.
15/01/96



**COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES**

GULF CANADA RESOURCES INC.

SEAM DETAIL

COAL DIVISION
MOUNT KLAPPAN PROJECT

TRUE THICKNESS

DATA SOURCE: KPN LR DDH-85029 SEAM : J INTERVAL(M) : 75.00 - 75.53 ELEVATION(M) : 1561.7
 GEOLOGIST : SAVOIE SCALE: DATE : JAN 07/86 DRAWING NO. :

SEAM COMP.	DRILL DEPTH <small>(METRES)</small>	COAL SEAM LOG	INTERVAL <small>(METRES)</small>		% REC.	SAMPLE ID		COAL/ROCK TOTAL		COAL QUALITY A.D.B.						
			ROCK	COAL		SIMP	COMPI	COMPOS	MINING SECTION	RES MOIST	ASH	VM	FC	TS	SALVAGE GJ/EG	
	75.00	↑ [Diagram of seam log showing a coal seam between 75.00 and 75.53 meters depth] ↓														
	75.53			0.43	100.0	6619	6619	0.43 / 0.00		0.47	33.37	—	—	0.35	—	—

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH85030

DATE - 01/09/86

- HISTORY -

START DATE - 08/04/85
END DATE - 08/04/85

CONTRACTOR - J T THOMAS
GEOLOGIST - SWANBERGSON

OPERATOR - GCR1
SURVEYOR - MWG & ASS

REMARKS - DRILLED IN PIT AREA AND HAS SINCE BEEN MINED

- LOCATION -

PROVINCE - BC
ELEVATION - 1826.20

ZONE - 9
NORTHING - 6344306.00
EASTING - 505778.31

LICENCE/LEASE NUMBER - 7152

LATITUDE - 571437
LONGITUDE - 1285415

- ORIENTATION -

LENGTH - 31.17

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 0.00
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK

DDH85030		6678	19.05	20.48	100.00		1.357			0.000- 1.357
	I	6679	20.48	21.98	92.67	1.250	0.066	0.104		1.250- 0.170
	I	6680	21.98	22.36	100.00	0.283	0.075			0.283- 0.075
	I	6681	22.36	24.69	100.00	2.198				2.198- 0.000
		6682	24.69	25.33	100.00		0.602			0.000- 0.602

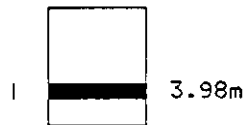
GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL-ROCK
DDH85030	I	0	6679	6681	20.48	24.69	97.38	3.95	0.15	0.00	0.11	3.95- 0.26

MT. KLAPPAN COAL PROPERTY

1985 DIAMOND DRILL HOLES
DDH85030

SEAM TRUE SEAM THICKNESS
 (COAL & ROCK)



NOTE: SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm COAL.

SCALE: 1:2000

GULF CANADA RESOURCES INC.
15/01/86



**COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES**

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH85031

DATE - 01/09/86

- HISTORY -

START DATE - 08/05/85
END DATE - 08/05/85

CONTRACTOR - J T THOMAS
GEOLOGIST - SAVOIE

OPERATOR - GCRI
SURVEYOR - MWG & ASS

REMARKS - DRILLED IN PIT AREA AND HAS SINCE BEEN MINED

- LOCATION -

PROVINCE - BC
ELEVATION - 1827.40

ZONE - 9
NORTHING - 6344324.00
EASTING - 505717.44

LICENCE/LEASE NUMBER - 7152

LATITUDE - 571438
LONGITUDE - 1285419

- ORIENTATION -

LENGTH - 22.11

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 0.00
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE



GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
DDH85031		6683	7.53	8.12	100.00		0.554			0.000- 0.554
	I	6684	8.12	9.72	68.75	0.975	0.066	0.476		1.451- 0.066
	I	6685	9.72	10.01	51.72	0.105	0.038		0.134	0.105- 0.172
	I	6686	10.01	12.85	80.28	2.155	0.049	0.365	0.173	2.520- 0.222
		6687	12.85	13.38	100.00		0.517			0.000- 0.517

GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN 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
DDH85031	I	0	6684	6686	8.12	12.85	74.63	3.37	0.16	0.88	0.32	4.25- 0.48

MT. KLAPPAN COAL PROPERTY

1985 DIAMOND DRILL HOLES

DDH85031

SEAM

TRUE SEAM THICKNESS
(COAL & ROCK)



NOTE: SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm COAL.

SCALE: 1:2000

GULF CANADA RESOURCES INC.
15/01/86



COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH85032

DATE - 01/09/86

- HISTORY -

START DATE - 08/05/85
END DATE - 08/05/85

CONTRACTOR - J T THOMAS
GEOLOGIST - SAVOIE

OPERATOR - GCRI
SURVEYOR - MWG & ASS

REMARKS - DRILLED IN PIT AREA AND HAS SINCE BEEN MINED

- LOCATION -

PROVINCE - BC
ELEVATION - 1825.00

ZONE - 9
NORTHING - 6344291.00
EASTING - 505843.56

LICENCE/LEASE NUMBER - 7152

LATITUDE - 571437
LONGITUDE - 1285411

- ORIENTATION -

LENGTH - 40.85

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 0.00
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE



GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK

DDH85032		6688	26.09	27.54	100.00	1.449				0.000- 1.449
	I	6689	27.54	29.06	85.53	1.268	0.030	0.120	0.100	1.388- 0.130
	I	6690	29.06	29.39	100.00	0.240	0.090			0.240- 0.090
	I	6691	29.39	30.95	53.85	0.757	0.080	0.428	0.289	1.185- 0.369
	I	6692	30.95	31.21	100.00	0.219	0.040			0.219- 0.040
	I	6693	31.21	33.03	100.00	1.798	0.010			1.798- 0.010
		6694	33.03	34.38	100.00		1.337			0.000- 1.337

GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL-ROCK
DDH85032	I	0	6689	6693	27.54	33.03	82.87	4.30	0.25	0.55	0.39	4.85- 0.64

COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES

===== GULF CANADA RESOURCES INC. =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPNLRDDH85033

DATE - 01/09/86

- HISTORY -

START DATE - 08/06/85
END DATE - 08/06/85

CONTRACTOR - J T THOMAS
GEOLOGIST - BUHAY

OPERATOR - GCRI
SURVEYOR - MWG & ASS

REMARKS - DRILLED IN PIT AREA AND HAS SINCE BEEN MINED

- LOCATION -

PROVINCE - BC
ELEVATION - 1809.10

ZONE - 9
NORTHING - 6344258.00
EASTING - 506019.06

LICENCE/LEASE NUMBER - 7152

LATITUDE - 571436
LONGITUDE - 1285401

- ORIENTATION -

LENGTH - 22.23

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 0.00
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

03/JAN/86 GULF CANADA RESOURCES INC. - COAL DIVISION
 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK

DDH85033		6695	10.26	10.96	100.00	0.673				0.000- 0.673
	I	6696	10.96	12.62	46.99	0.705	0.048	0.598	0.251	1.303- 0.299
	I	6697	12.62	12.88	53.85	0.010	0.126		0.116	0.010- 0.242
	I	6698	12.88	14.28	66.43	0.880	0.019	0.455		1.335- 0.019
	I	6699	14.28	14.46	100.00	0.155	0.020			0.155- 0.020
	I	6700	14.46	16.62	100.00	2.100				2.100- 0.000
		6701	16.62	17.14	100.00		0.506			0.000- 0.506

GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN 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
DDH85033	I	0	6696	6700	10.96	16.62	74.02	3.97	0.22	1.09	0.38	5.06- 0.60

MT. KLAPPAN COAL PROPERTY

1985 DIAMOND DRILL HOLES
DDH85033

SEAM

TRUE SEAM THICKNESS
(COAL & ROCK)



NOTE: SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm COAL.

SCALE: 1:2000

GULF CANADA RESOURCES INC.
15/01/86



COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES

===== GULF CANADA RESOURCES INC. =====

- DATA SOURCE SUMMARY -

DATA SOURCE - KPnlRDDH85034

DATE - 01/09/86

- HISTORY -

START DATE - 08/06/85
END DATE - 08/06/85

CONTRACTOR - J T THOMAS
GEOLOGIST - BUHAY

OPERATOR - GCRI
SURVEYOR - MWG & ASS

REMARKS - DRILLED IN PIT AREA AND HAS SINCE BEEN MINED

- LOCATION -

PROVINCE - BC
ELEVATION - 1820.02

ZONE - 9
NORTHING - 6344261.00
EASTING - 505908.12

LICENCE/LEASE NUMBER - 7152

LATITUDE - 571436
LONGITUDE - 1285408

- ORIENTATION -

LENGTH - 40.35

INCLINATION - 90.0
AZIMUTH - 0.0

CORE SIZE - 0.0

CEMENT -
PLUG -
PIEZ -

CASING DEPTH (M) - 0.00
AQUIFER DEPTHS (M) - 0.00
0.00
LOST CIRC. DEPTHS (M) - 0.00
0.00

*** NOTE *** 0 INDICATES NO VALUE

=====

GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 SIMPLE SAMPLE SUMMARY PAGE 1
 TRUE THICKNESS
 KLAPPAN PROJECT

DATA SOURCE	SEAM	SAMPLE ID	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	ROCK	MISSING COAL	ROCK	TOTAL COAL - ROCK
DDH85034		6702	29.46	30.32	100.00		0.852			0.000 - 0.852
	I	6703	30.32	31.87	83.23	1.248	0.030	0.158	0.099	1.406 - 0.129
	I	6704	31.87	32.20	100.00	0.207	0.118			0.207 - 0.118
	I	6705	32.20	33.28	61.11	0.652		0.415		1.067 - 0.000
	I	6706	33.28	33.43	100.00	0.090	0.060			0.090 - 0.060
	I	6707	33.43	35.52	87.56	1.806		0.256		2.062 - 0.000
		6708	35.52	37.66	100.00		2.108			0.000 - 2.108

GULF CANADA RESOURCES INC. - COAL DIVISION
 03/JAN/86 COMPOSITE SAMPLE SUMMARY PAGE 1
 APPARENT THICKNESS
 KLAPPAN PROJECT

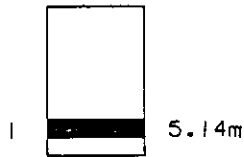
DATA SOURCE	SEAM	COMP ID	SAMPLE FROM	SAMPLE TO	DEPTH FROM	DEPTH TO	PERCENT REC	RECOVERED COAL	RECOVERED ROCK	MISSING COAL	MISSING ROCK	TOTAL COAL-ROCK
DDH85034	I	0	6703	6707	30.32	35.52	81.92	4.05	0.21	0.84	0.10	4.89- 0.31

MT. KLAPPAN COAL PROPERTY

1985 DIAMOND DRILL HOLES
DDH85034

SEAM

TRUE SEAM THICKNESS
(COAL & ROCK)



NOTE: SCHEMATIC PROFILE.
NO THICKNESSES SHOWN
FOR SEAMS CONTAINING
LESS THAN 50cm COAL.

SCALE: 1:2000

GULF CANADA RESOURCES INC.
15/01/86



**COAL SEAM DATA SHEETS
AND
COAL QUALITY ANALYSES**

