CB - Mount Greer 81C 1JA

MOUNT GREER COAL PROJECT

GEOLOGICAL REPORT

1981

026

GULF CANADA RESOURCES INC.

COAL DIVISION

CB-Mount Greer 81(1)A

GULF CANADA RESOURCES INC.

MOUNT GREER COAL PROJECT GEOLOGICAL REPORT

1981

COAL LICENCE NUMBERS 7020 TO 7036 INCLUSIVE

NTS MAP NUMBERS

93 F/16 WEST AND 93 F/15 EAST

PROPERTY LOCATION

LATITUDE 53°50'N

LONGITUDE 124°32'W

GULF CANADA RESOURCES INC.

FEBRUARY, 1982

B.P. Flynn
E. Swanburgson

STATEMENT OF QUALIFICATIONS

BRIAN P. FLYNN

This is to certify that I obtained my Bachelor of Science Degree in Geology at the University of Natal, South Africa in 1971.

Since graduation I spent one year in base metal exploration in South Africa and a total of five and one half years in coal exploration in Western Canada. Of this period, four years have been in the Coal Division of Gulf Canada Resources Inc., during which time I have been responsible for the planning and supervision of evaluation programs involving diamond and rotary drilling, as well the design of regional exploration programs in Western Canada and the Arctic. At the present time I hold the position of Supervisor Regional Exploration.

APPENDIX IV

Coal Quality Analysis Results - Drilling

REFLECTANCE DATA FOR SAMPLE
Reference No. 23-17407

I	X(I)	X(I+1)
1	0.2200	0.2100
3	0.2200	0.2200
5	0.2200	0.2400
7	0.2300	0.2500
9	0.2000	0.2400
11	0.2300	0.2300
13	0.2400	0.2400
15	0.2300	0.2600
17	0.2300	0.2300
19	0.2600	0.2400
21	0.2500	0.2500
23	0.2500	0.2500
25	0.2500	0.2500
27	0.2400	0.2400
29	0.2500	0.2500
31	0.2500	0.2500
33	0.2100	0.2600
35	0.2500	0.2500
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39	0.2100	0.2400
41	^ 2300	0.2400
43	0.2400	0.2300
45	0.2600	0.2500
47	0.2200	0.2500
49	0.2500	0.2400

BASIC STATISTICS

****

N = 50

STD ERROR OF THE MEAN= .00

MEAN = .2388

COEF OF VARIATION = 6.08%

VARIANCE = .0002

STANDARD DEVIATION = .0145

SKEWNESS = -.7190

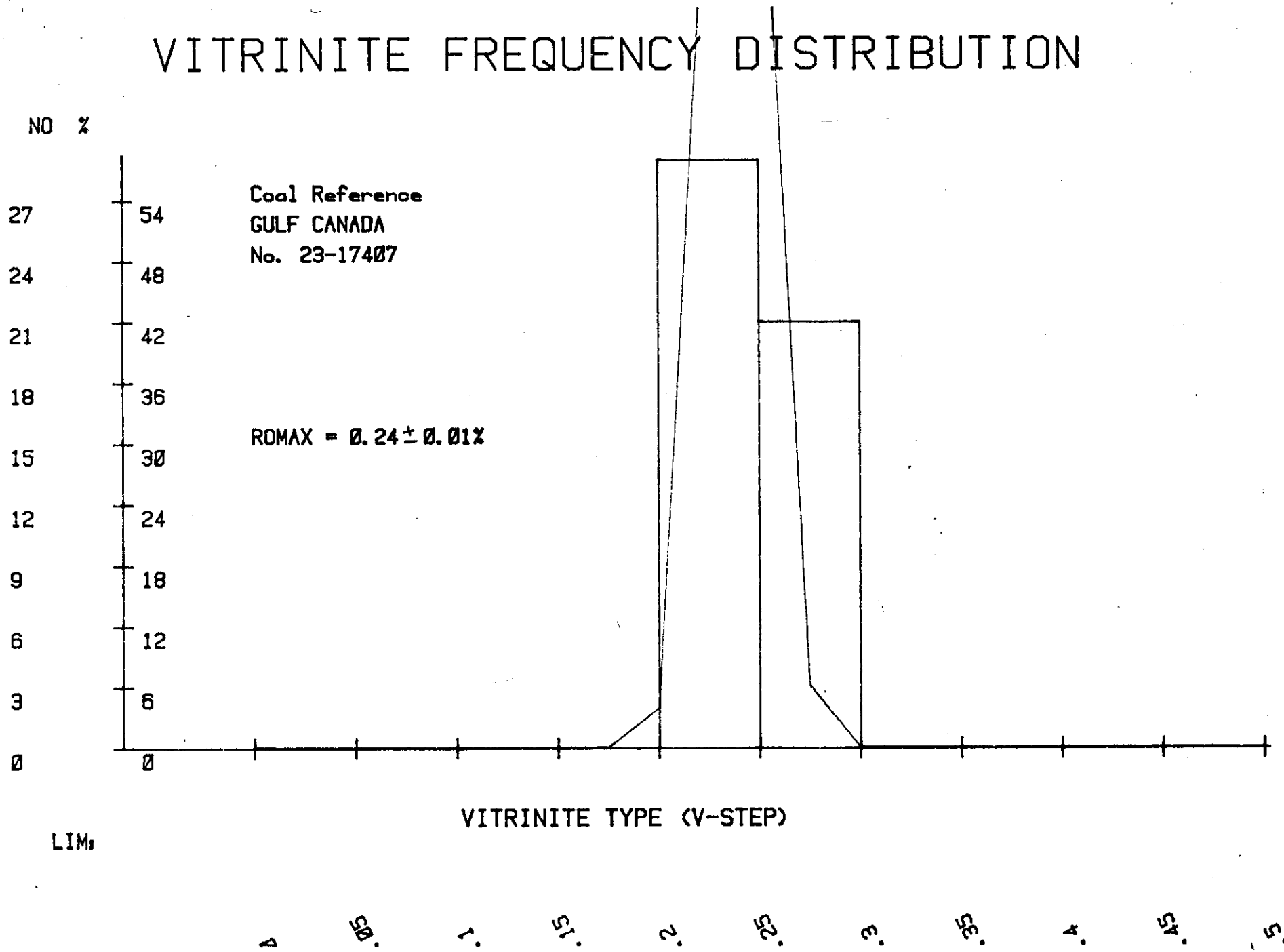
KURTOSIS = 2.8492

95.00% C.I. FOR MEAN:

(.2347, .2429)

ONE-TAIL t(49 , .025)= 2.01003450016

VITRINITE FREQUENCY DISTRIBUTION



GULF CANADA RESOURCES

ATTN: E. Swanbergson

LORING LABORATORIES LTD

CERTIFICATE of COAL TESTING

P.O. # FWO 23-17406

FILE NO.: 22935

DATE: January 5, 1982

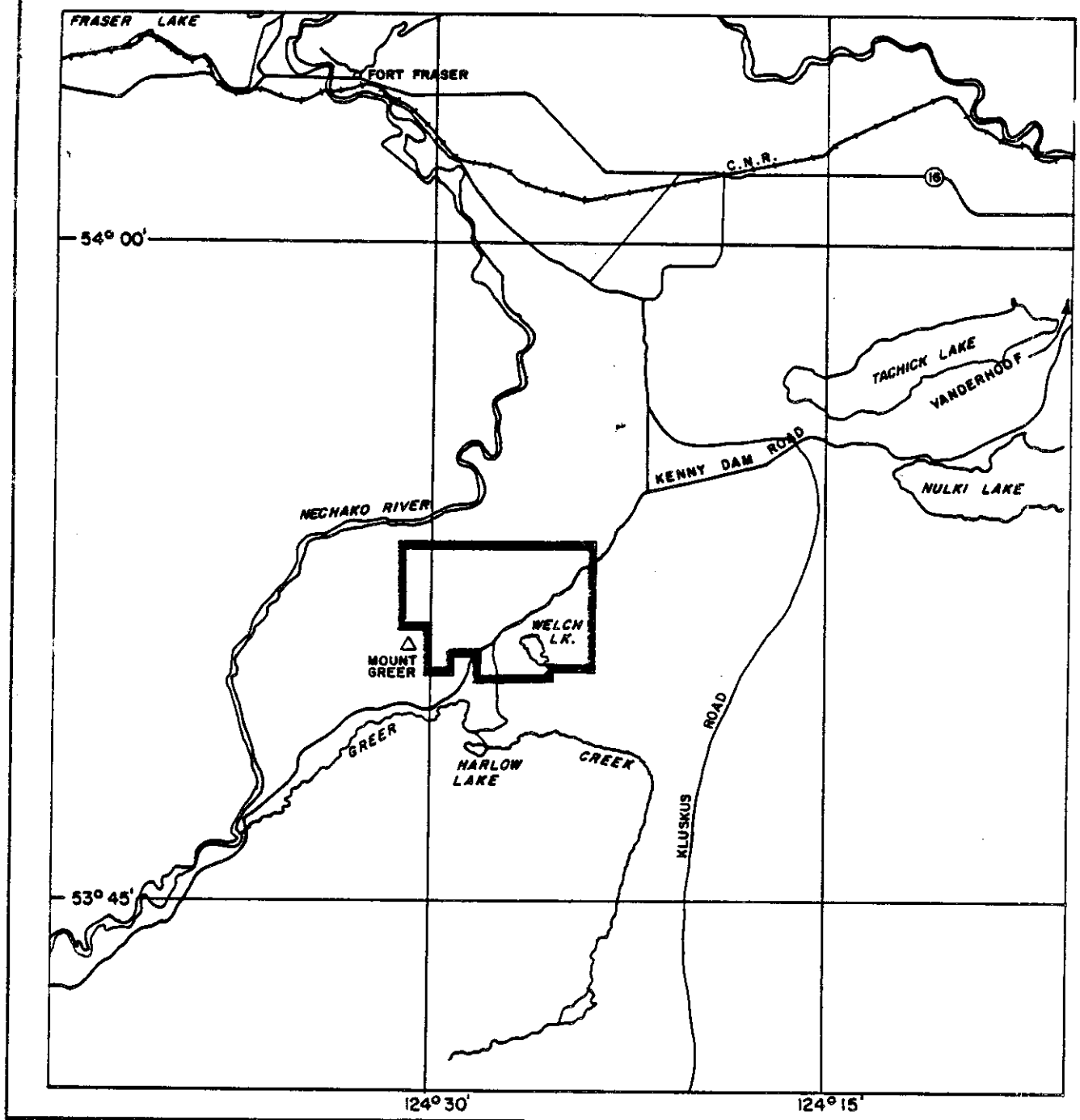
SAMPLE NO.	IDENTIFICATION	SAMPLE TYPE	% RECOVERY			REC'D % H_2O	% H_2O	% VCL MATTER	% ASH	% FIXED CARBON	% S	BTU /LB.	F.S.I.	
			SINK	FLOAT										
No. 1		Raw Coal			As Received	26.66	–	27.13	25.46	20.75	.54	5,556		
					Air Dried	–	6.19	34.70	32.57	26.54	.69	7,106		
					Dry Basis	–	–	36.99	34.72	28.29	.74	7,575		

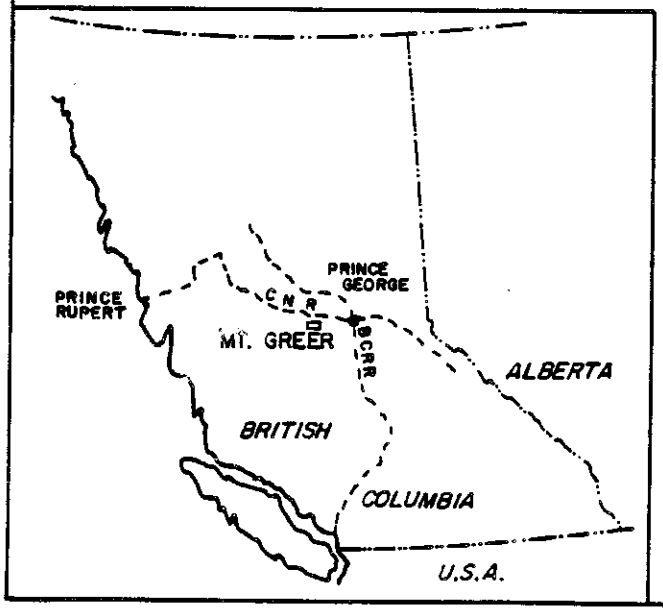
STATEMENT OF QUALIFICATIONS

ERIC SWANBERGSON

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

My geological experience has been primarily in exploration and mapping in Saskatchewan, Alberta, British Columbia, and the Northwest Territories. My background has been in uranium, oil and gas, and coal exploration. I have been employed as a geologist in the Coal Division of Gulf Canada Resources Inc. since late 1980.





MILES
0 5 10
0 5 10 15
KILOMETERS

SCALE 1: 250,000

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. GREER COAL PROJECT
LOCATION MAP

PREPARED BY:	SCALE 1: 250000
APPROVED BY: E.S. DATE: FEB. 82	DRAWING No.

SUMMARY

Location:

The Mount Greer coal property is situated in central British Columbia, approximately 140 kilometres west of Prince George.

Access:

Access to the property is via gravel road from either Vanderhoof or Fort Fraser. The distance in both cases is approximately 40 kilometres.

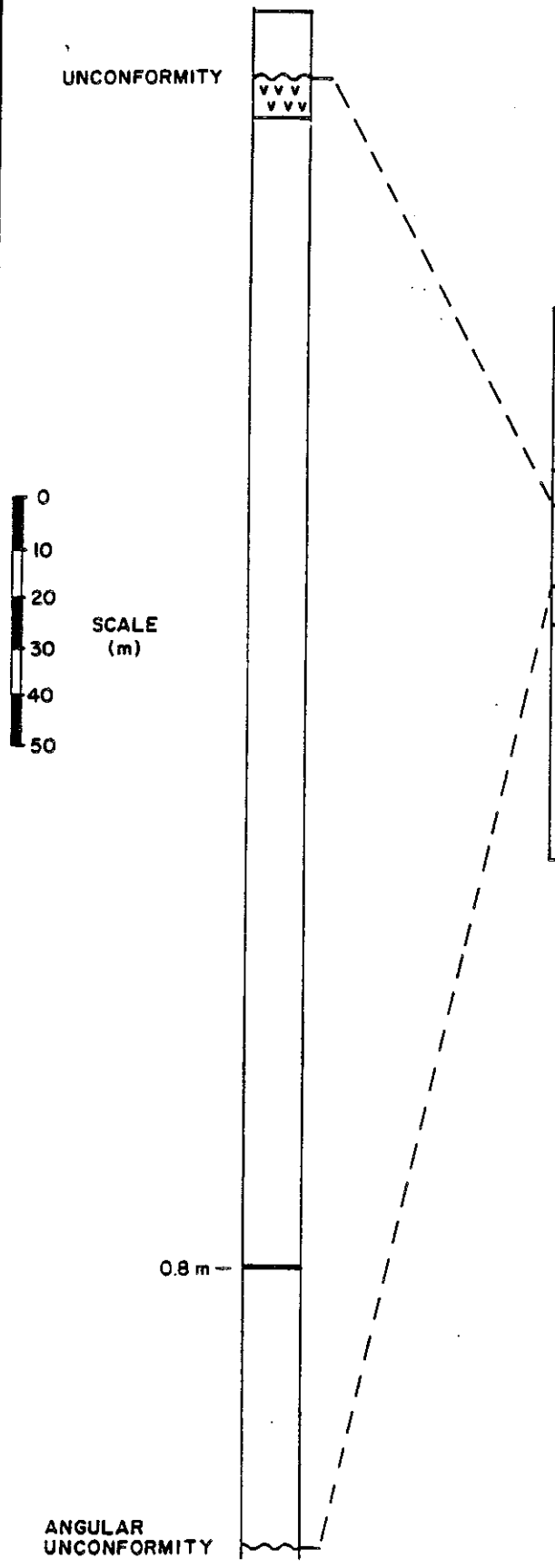
Licences and Ownership:

The Mount Greer coal property is comprised of 17 licences with a total area of 4302 hectares, in which Gulf Canada Resources has 100% ownership.

Exploration:

A ten day mapping program of the licence block was run in the summer of 1981. A second program, in the winter of 1981, comprised one rotary hole drilled to obtain core and quality analyses on a reported subsurface 9.8 metre coal zone. This zone was reported by E & B Exploration in 1978 while drilling for uraniferous sediments.

RDH-81-001



FORMATION	LITHOLOGY	PERIOD OR EPOCH
	Stream and lake deposits, talus, soil	Recent
	Glacial and glacio-fluvial deposits	Pleistocene
EROSIONAL INTERVAL		
Endako Group	Basalt, andesite; related tuff and breccia; siltstone shale and greywacke, coal	Miocene and (?) Later
ANGULAR UNCONFORMITY		
Ootsa Lake Group	Rhyolitic and dacitic tuff and breccia; shale, sandstone and conglomerate	Upper Cretaceous to Lower Miocene
	Rhyolite dacite, trachyte andesite; minor basalts; related tuff and breccia	
	Basalt, andesite minor rhyolite, sandstone and conglomerate	

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Coal Division
CALGARY ALBERTA

Gulf

MT. GREER COAL PROJECT

GENERALIZED STRATIGRAPHIC COLUMN

Stratigraphy:

The Mount Greer licence block is underlain by the Tertiary Endako Group. This unit consists of basal sediments, in association with minor coal beds, overlain by a predominantly basaltic volcanic cap rock. Underlying the Endako Group are layered volcanic flows of the Tertiary Ootsa Lake Group.

Structure:

There is no evidence of major faulting or folding in the area, though small scale flexures occur in the sub-horizontal basal Endako sediments.

Resources:

The lack of economic seams precluded the calculation of a potential resource.

Coal Quality:

The Head Analysis of samples taken proved the coal to be lignitic in rank.

Recommendations:

Further work is not merited and it is recommended that the property be dropped.

MOUNT GREER PROJECT

TABLE OF CONTENTS

LIST OF FIGURES

PHOTOGRAPHS

LIST OF APPENDICES IN TEXT

APPENDICES IN INTERNAL SLEEVE

1.0.0 INTRODUCTION

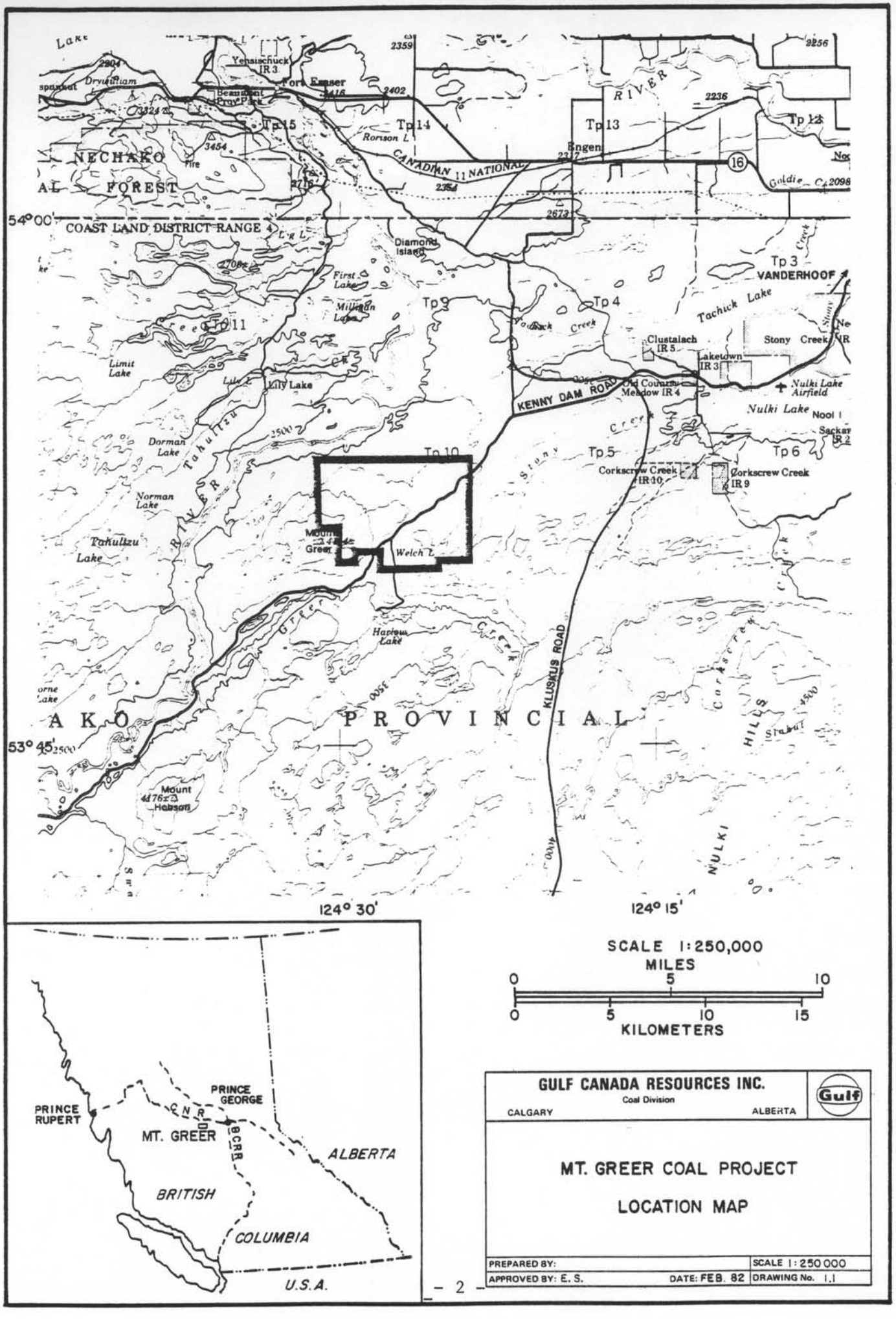
1.1.0 Location

The Mount Greer coal property is situated in central British Columbia approximately 140 kilometres west of Prince George, B.C. The licences lie between Greer Creek and the Nechako River, south of Highway 16, which is geographically located at 53°50' north latitude and 124°32' west longitude (Figure 1.1).

1.2.0 History

G.M. Dawson of the Geologic Survey of Canada first reported coal in the area in 1878. He made brief mention of a four foot seam along the Nechako River bank near Mount Greer. H.W. Tipper, also of the G.S.C., mapped the region in the early 1950's and produced the only geologic map of the area to date. The Dawson seam was not delineated, though large lignitic boulders were recorded along the Nechako River.

The sediments of the Tertiary Endako Group were drilled in the 1970's to determine if uranium placer deposits existed. The core logs failed to prove the above, but verified the existence of subsurface coal seams. No studies or analyses were conducted on the coal and the base metal claims were ultimately surrendered.



GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. GREER COAL PROJECT

LOCATION MAP

PREPARED BY:	SCALE 1:250 000
APPROVED BY: E. S. DATE: FEB. 82	DRAWING No. 1.1

After completing a regional study, Gulf Canada Resources Inc. obtained licences in the area on the basis of one of those core logs, which reported a 9.8 metre coal zone at depth. This report details the results of all phases of the Mount Greer coal property evaluation.

1.3.0 Licences

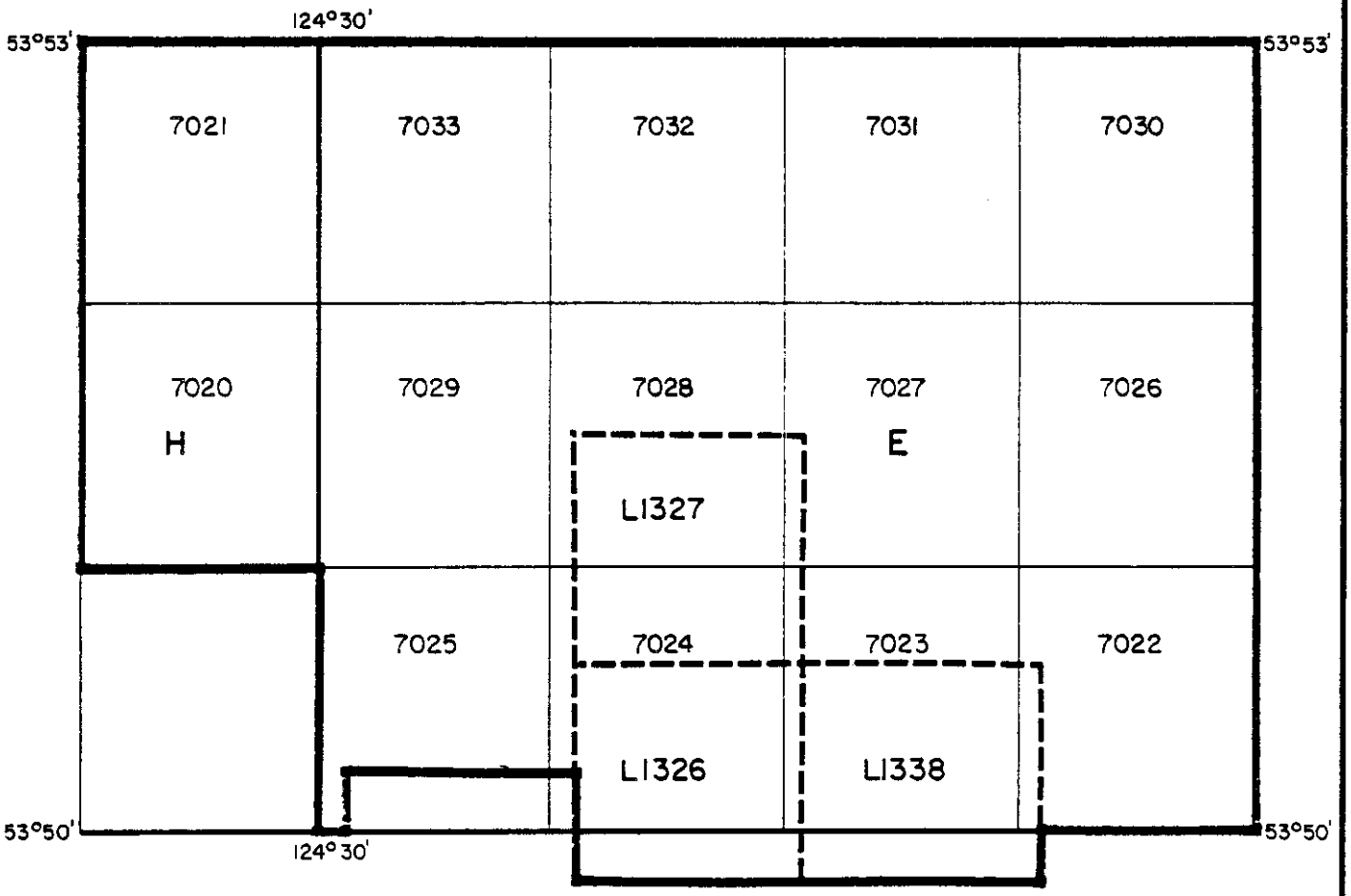
The Mount Greer property is comprised of seventeen licences as shown in Figure 1.2. The licence block consists of 4302 hectares and was acquired on March 1, 1981. The legal description of the property is enclosed in Appendix I.

1.4.0 Ownership

The Mount Greer coal licences are wholly owned by Gulf Canada Resources Inc.

1.5.0 Access

Two graded logging roads converge and cut through the center of the licence block. These roads feed into Fort Fraser and Vanderhoof, which are 35 and 43 kilometres from the property respectively (Figure 1.1). Highway 16 and the Canadian National Railroad, between Prince Rupert and Prince George, pass through both towns. Regional access to the area is depicted in Figure 1.3.



GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MOUNT GREER COAL PROJECT

COAL LICENCE MAP

PREPARED BY:	SCALE 1:50,000
APPROVED BY: DATE: FEB. 82	DRAWING No. 1.2

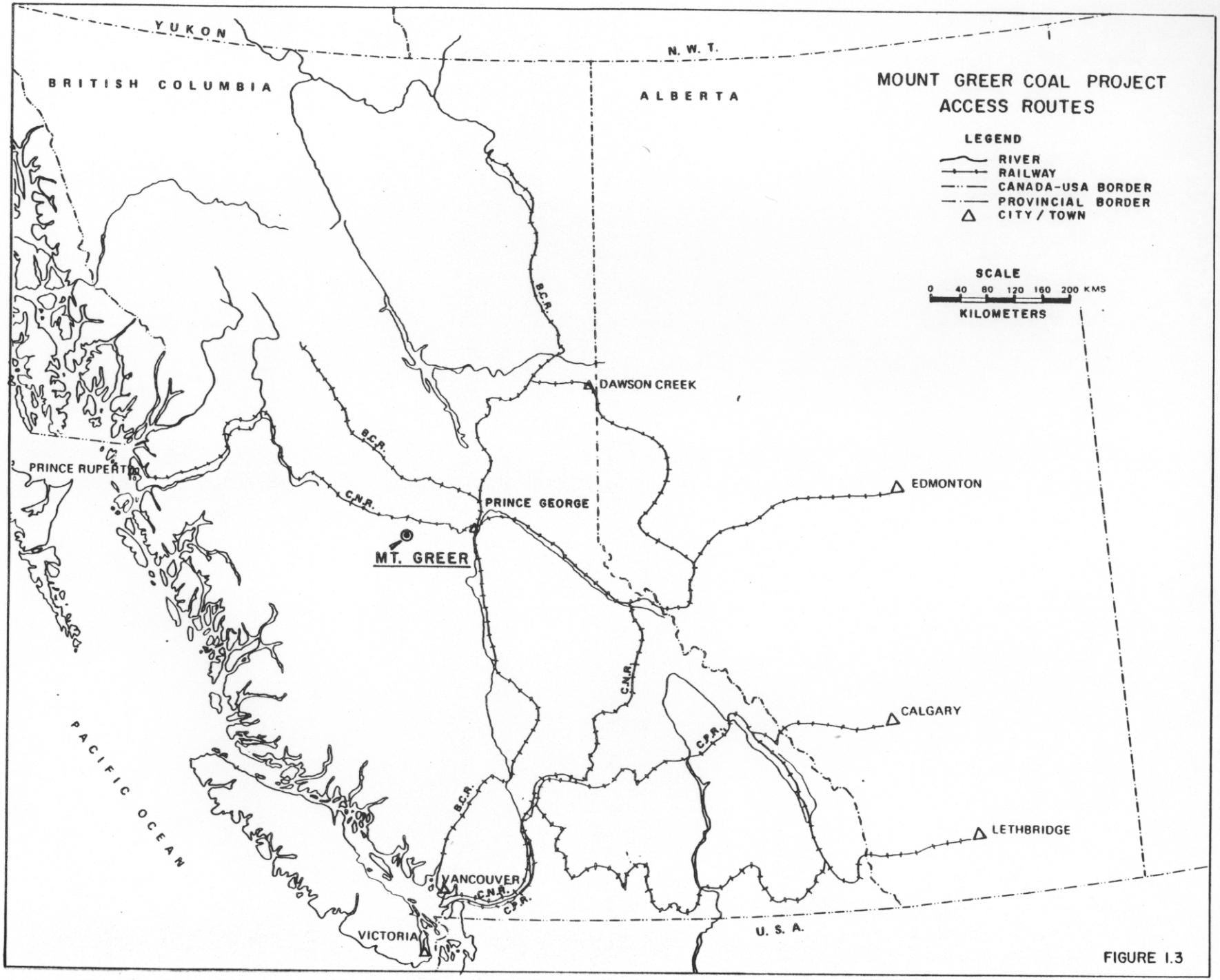

YUKON
N. W. T.
BRITISH COLUMBIA
ALBERTA
MOUNT GREER COAL PROJECT
ACCESS ROUTES
LEGEND
RIVER
RAILWAY
CANADA-USA BORDER
PROVINCIAL BORDER
CITY / TOWN
SCALE
0 40 80 120 160 200 KMS
KILOMETERS
B.C.R.
DAWSON CREEK
B.C.R.
PRINCE RUPERT
C.N.R.
PRINCE GEORGE
EDMONTON
MT. GREER
C.N.R.
CALGARY
C.P.R.
PACIFIC OCEAN
B.C.R.
LETHBRIDGE
VANCOUVER
C.N.R.
C.P.R.
VICTORIA
U. S. A.

FIGURE 1.3

1.6.0 Biophysical Environment

The region, as part of the Interior Plateau, was heavily scoured during glaciation resulting in a gentle to undulating topographic terrain.

Mount Greer forms the topographic high, immediately west of the licence block, at 1254 metres, while the marshes in the central and eastern portions of the property represent the topographic lows at approximately 825 metres.

The area is vegetated by both open and dense forest cover comprised essentially of primary and secondary growths of black spruce. Small clusters of poplar occupy the low lying and well drained regions.

Moose frequent the marshlands, but the heavy bush growth and high degree of land cultivation result in few large game sightings in the region.

2.0.0 EXPLORATION

2.1.0 Objectives

The objectives of the 1981 Mount Greer exploration program were:

a) to map the property and delineate any potential coal-bearing strata;

b) to locate and twin a drill hole beside EN-1, where a 9.8 metre seam was recorded;

c) to estimate an in-situ resource potential.

2.2.0 Introduction

The Gulf Canada Resources exploration of the Mount Greer area commenced with a 10 day mapping program in the summer of 1981. Subsequent to the initial field evaluation, a one hole rotary drill program was run for 7 days in the winter of that year.

2.3.0 Cartography

The Geological Survey of Canada published a geological map of the study area at a 1:253,440 scale. This map is out of print and is available only from G.S.C. Memoir 324.

Topographic maps at a 1:50,000 scale were utilized for field plotting of data.

2.4.0 Exploration

2.4.1 Geologic Mapping

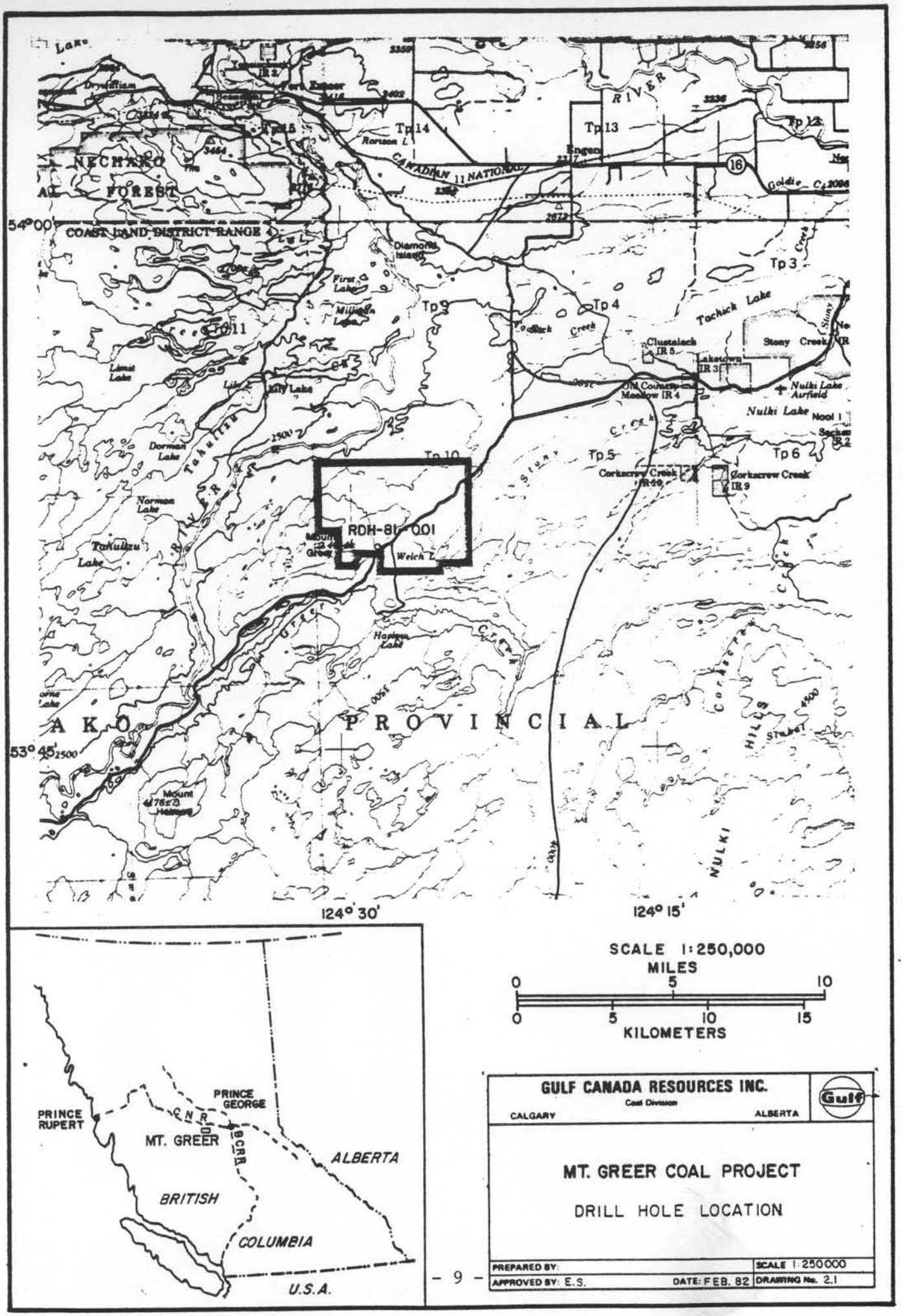
Initial exploration of the licence block was done from June 16 to 27, 1981. Personnel were based in Fraser Lake, approximately 50 kilometres northwest of the property.

The work consisted of ground traverses over the entire licence area. Results of the mapping program are plotted on a 1:50,000 base map in Appendix II.

2.4.2 Rotary Drilling

Field personnel were based in Vanderhoof, 42 kilometres southwest of the townsite, from December 10 to 16, 1981. One 15.2 centimetre diameter rotary drill hole, RDH 81-001 (Figure 2.1), was twinned beside EN-1, previously drilled by E & B Exploration in 1978, to a depth of 308 metres.

A 12 metre interval was cored (Figure 3.3) and logged but intersected no coal. The descriptive log is enclosed in Appendix III.



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Coal Division
CALGARY ALBERTA

MT. GREER COAL PROJECT

DRILL HOLE LOCATION

PREPARED BY:
APPROVED BY: E.S.
DATE: FEB. 82
SCALE 1:250000
DRAWING No. 2.1

Coal chip samples collected were tested via petrographic and head analysis methods. All results are enclosed in Appendix IV.

A geophysical logging contractor produced 1:200 metric scale logs of gamma-neutron, density, focused beam and caliper, along with deviation measurements. All logs are enclosed in Appendix V in the internal sleeve.

2.5.0 Reclamation

The drill site was leveled prior to drilling and was recontoured upon completion of the program. There was a minimal amount of disturbance and reseeding of the site is to be contracted out in the spring of 1982.

2.6.0 Project Management and Contractors

The 1981 coal exploration program was managed by B.P. Flynn (Supervisor, Regional Exploration) of Gulf Canada Resources Inc.

Field operations for the geologic mapping phase were supervised by a consulting geologist, J.M. Duford. The drill program was supervised by E. Swanbergson of Gulf Canada Resources Inc. The geological report was prepared by E. Swanbergson.

The following additional technical personnel contributed to the Mount Greer Coal Project:

R. Jackson M. DesRoches M. Rausch R. Maylor J. Newall	Geological Assistants
A. Vora	Field Bookkeeper

The following contractors, suppliers and service companies were used during the project:

Can-West Drilling Inc.	Prince George
Eric Weinhardt (Catskinner)	Vanderhoof
Glenn's Motor Inn	Vanderhoof
Fraser Lake Inn	Fraser Lake
Canuck Truck Rental	Prince George
Camday Truck Rental	Calgary
Neville Crosby Inc.	Vancouver
Cyclone Engineering Ltd.	Edmonton
Loring Laboratories	Calgary
D.E. Pearson and Associates	Victoria
Totem Distributors	Calgary
Levitt Safety	Prince George
Domex Packaging Ltd.	Vancouver
Alida Surplus Ltd.	Calgary
Deitrich-Post Ltd.	Calgary
Prairie 'n Peak	Calgary
International Survival Supplies	Calgary
Economy Bookbindery Co. Ltd.	Calgary

3.0.0 GEOLOGY

3.1.0 Regional Geology

The Mount Greer region consists of extrusive flow rocks, intrusive plutons, and sedimentary rocks.

The flow rocks, mainly basalt, andesite and related tuffs and breccias, are commonly of limited lateral extent resulting in unconformities and incomplete stratigraphic sequences. For example, Tertiary rocks are known to be unconformably in contact with plutonic rocks of the Jurassic.

The major plutons that intruded the region occurred during the Lower Jurassic and the Upper Jurassic.

The most extensive stratigraphic unit is the Tertiary Endako Group. Coal has been reported in the basal sediments of this unit which were subsequently overlain by basaltic and andesitic flows, also of the Endako Group. The highly recessive Endako sediments are in close time association with the volcanic flow rocks and, to facilitate geologic mapping, were considered a single stratigraphic unit.

Pleistocene glaciation substantially removed or buried evidence of the Endako Group, and sedimentary exposures are rare.

FORMATION	LITHOLOGY	PERIOD OR EPOCH
	Stream and lake deposits, talus, soil	Recent
	Glacial and glacio-fluvial deposits	Pleistocene
	EROSIONAL INTERVAL	
Endako Group	Basalt, andesite; related tuff and breccia; shale, siltstone greywacke and lignite	Miocene and (?) Later
	ANGULAR UNCONFORMITY	
Ootsa Lake Group	Rhyolitic and dacitic tuff and breccia; shale sandstone and conglomerate Rhyolite, dacite, trachyte, andesite; minor basalts; related tuff and breccia Basalt, andesite, minor rhyolite, sandstone and conglomerate	Upper Cretaceous to Lower Cretaceous

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Coal Division
CALGARY ALBERTA

MT. GREER PROPERTY
TABLE OF FORMATIONS

PREPARED BY: SCALE
APPROVED BY: DATE: DRAWING No. FIG. 3.1

3.2.0 Stratigraphy

Local to the Mount Greer licences, outcroppings are restricted to the Tertiary Ootsa Lake Group, Endako Group, and the Jurassic Topley Intrusives.

Any drilling in the region was halted upon entry into the Ootsa Lake Group, resulting in nominal pre-Miocene drill hole data.

3.2.1 Ootsa Lake Group

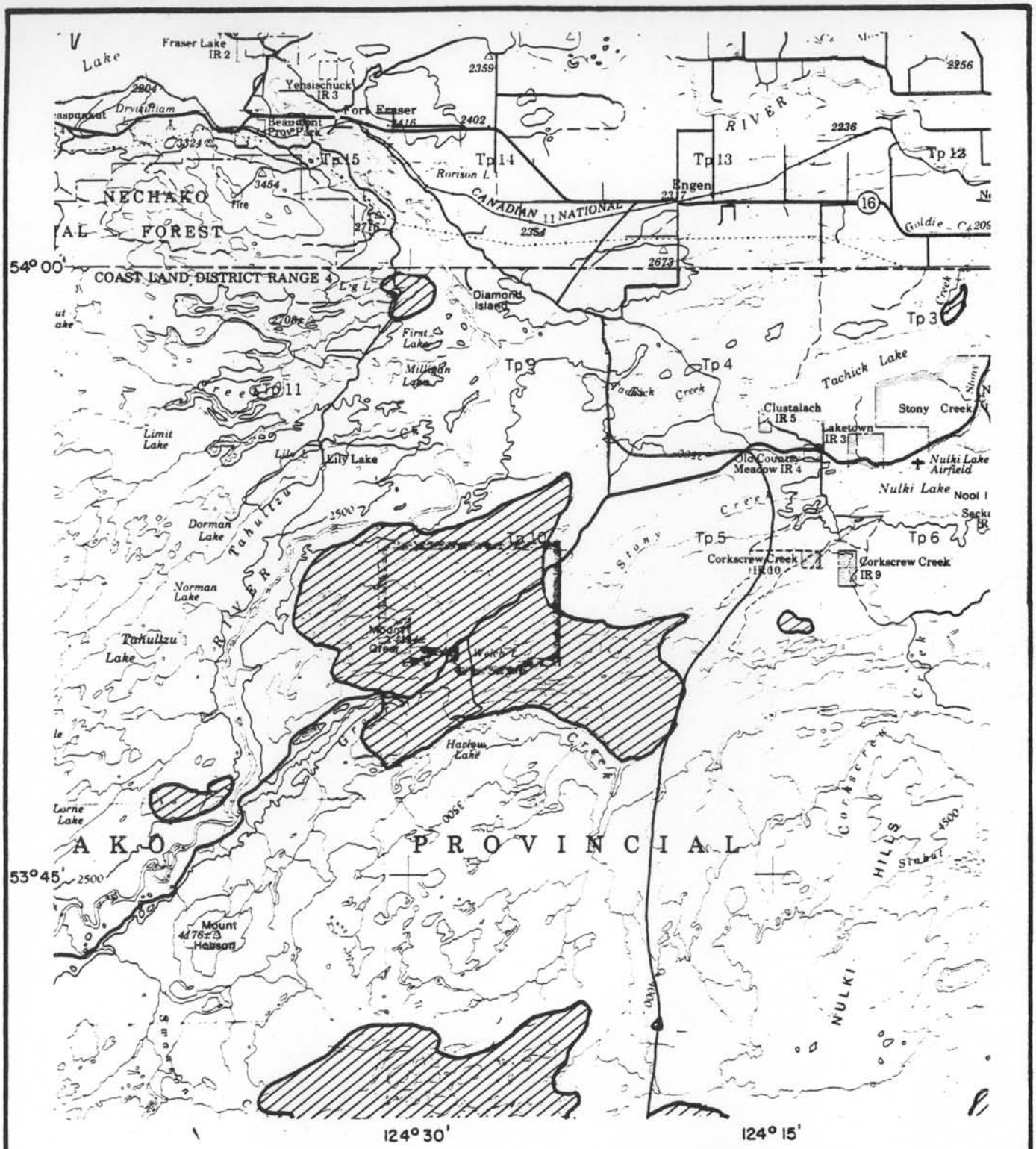
The volcanic flow and minor sedimentary rocks of the Ootsa Lake Group are angularly unconformable to underlying Mesozoic rocks.

Previous work by Tipper divided the group into two; the Andesite Unit and the Rhyolite Unit. The Andesite Unit is Upper Cretaceous in age and is in excess of 500 metres thickness. The Rhyolite Unit is Paleocene in age and has an undetermined thickness.

The contact between these units is lithologically gradational and highly arbitrary.

3.2.2 Endako Group

The Tertiary Endako Group unconformably overlies the Ootsa Lake Group and consists of sedimentary rocks of the late Oligocene overlain by volcanic rocks of the late Oligocene, Miocene, and younger.



TERTIARY
ENDAKO GROUP

MILES
0 5 10
0 5 10 15
KILOMETERS

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

Gulf

Mt. GREER COAL PROPERTY
GEOLOGY

PREPARED BY:	SCALE 1: 250,000
APPROVED BY: E.S. DATE: FEB. 82	DRAWING No. 3.2

The Endako Group entirely underlies the licence block as depicted in Figure 3.2.

The basal sediments of the Endako fill pre-Miocene valleys and vary in thickness from 10 to 300 metres.

Photo 3.1
Coal-bearing Endako sediments outcropping near Cheslatta Falls
(40 kms. southwest of the property)

The sediments consist of monotonous shale, siltstone, and sandstone sequences plus minor conglomerate and lignitic coal.

Observed outcroppings of the Endako sediments (Photo 3.1) proved the existence of lignite in the Group. These outcrops are comprised of coal lenses, less than

45 cm thick, interbedded with silty sediments and bentonite beds.

Drill hole logging results from RDH 81-001 showed that the Endako sediments consist essentially of:

110 metres	-	sandstone, siltstone, shale interbeds
50 metres	-	sandstone and shale interbeds
50 metres	-	shale and silty shale interbeds
45 metres	-	finely bedded sandstone, siltstone and shale interbeds
25 metres	-	unlogged to base of unit

Caving problems prevented logs from being run to T.D.

Overlying the basal sediments are the Endako extrusive flow rocks consisting essentially of andesite and basalt. These volcanics are approximately 430 metres thick and were formed from a series of flows, of limited lateral extent, overlying each other.

Mount Greer consists almost entirely of vesicular to amygdaloidal basalt with the best exposures being on the south face. No Endako sediments outcrop on the licence block.

3.2.2.1 Coal Development

The reported seam development in drill hole EN-1 was disproved by this program (Figure 3.3). There is no coal of significant thickness within the Endako sediments on the Mount Greer property.

The discrepancies between the twinned holes can be accounted for by:

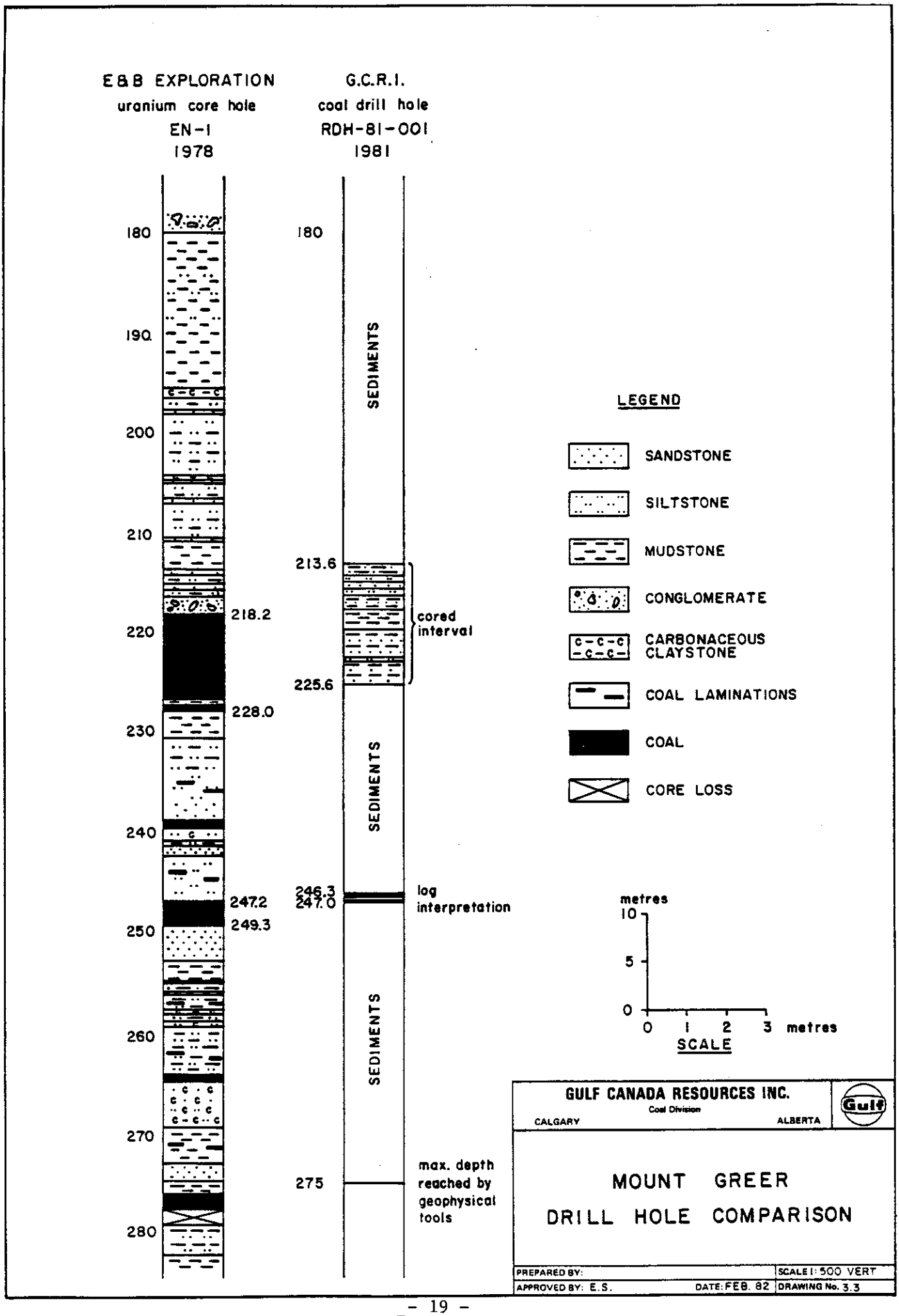
i) erroneous logging of original hole, or

ii) the existence of a major washout initiated by tectonic uplift local to the region.

Of the two possibilities, the former is the more probable.

One coal zone 0.8 metres thick was intersected at a depth of 246.3 metres and was analyzed to be lignitic in rank.

Stringers of lignite have been observed at Cheslatta Falls as shown in Photo 3.1. Similar coal banding may exist in the Endako sediments on the licence block but such beds are not in evidence on the geophysical logs and, if present, are too thin for proper downhole tool resolution.


E&B EXPLORATION
uranium core hole
EN-1
1978
G.C.R.I.
coal drill hole
RDH-81-001
1981
180
190
200
210
220
230
240
250
260
270
280
218.2
228.0
247.2
249.3
SEDIMENTS
213.6
225.6
cored interval
SEDIMENTS
246.3
247.0
log interpretation
SEDIMENTS
275
max. depth reached by geophysical tools
LEGEND
SANDSTONE
SILTSTONE
MUDSTONE
CONGLOMERATE
CARBONACEOUS CLAYSTONE
COAL LAMINATIONS
COAL
CORE LOSS
metres
10
5
0
0 1 2 3 metres
SCALE
GULF CANADA RESOURCES INC.
Coal Division
CALGARY
ALBERTA
Gulf
MOUNT GREER
DRILL HOLE COMPARISON
PREPARED BY:
SCALE 1: 500 VERT
APPROVED BY: E.S.
DATE: FEB. 82
DRAWING No. 3.3

3.2.3 Topley Intrusives

The Topley Intrusives were emplaced during the Lower Jurassic and, within the map area, consist of granite, granodiorite and diorite. These rocks underlie a large portion of the Mount Greer area and are known to be in contact with rocks of Tertiary age immediately west of the property.

3.3.0 Structure

The Endako sediments lie on an unconformity and are best described structurally as subhorizontal, though the regional dip trends gently east.

Regionally fault lineations are observable on airphotos though none are evident on the licence block. There is no evidence as to the degree of displacement along fault planes.

4.0.0 RESOURCE POTENTIAL

The lack of economic coal seams precluded the calculation of a potential resource.

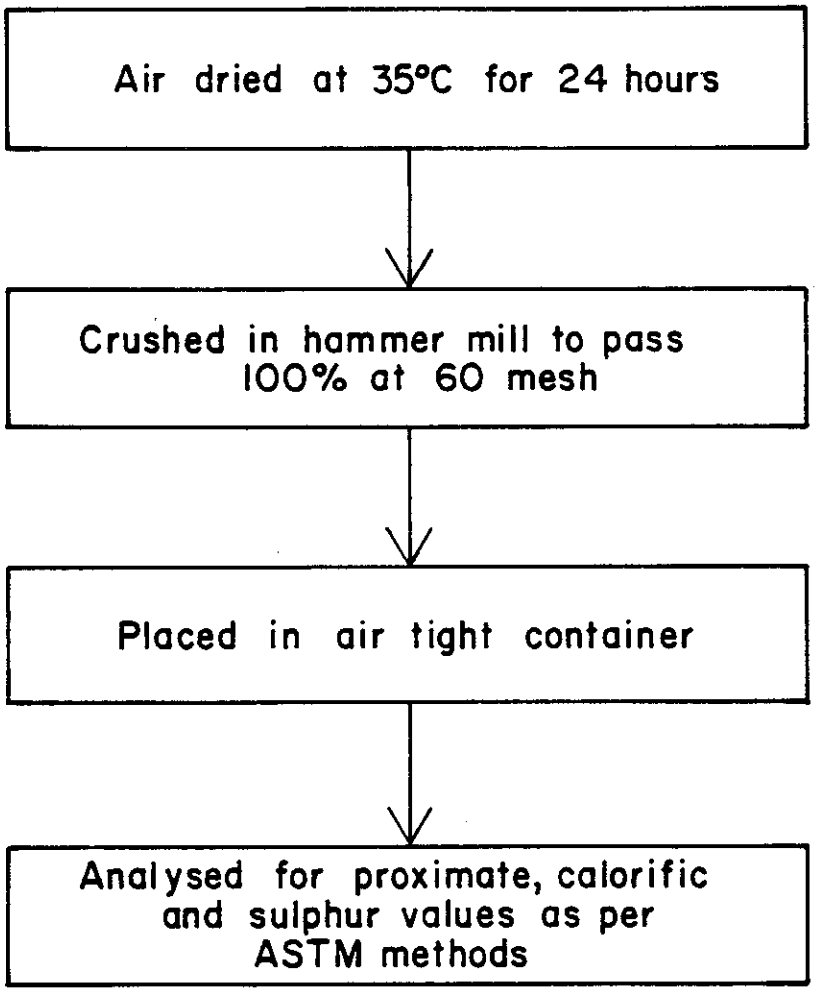
5.0.0 COAL QUALITY

5.1.0 Drill Hole Analysis

Rotary drill hole RDH 81-001 lost circulation at a depth of 225 metres, and the chip samples collected are believed to have come from the coaly zone at 246.3 metres (refer to focused beam log in Appendix V).

The small sample collected was sent for petrographic and head analysis, as per ASTM methods, the results of which are recorded in Appendix IV.

The coal was determined to be lignitic with an average BTU value of 15.69 MJ/kg.



GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA

MT. GREER PROGRAM
COAL ANALYSIS FLOW SHEET

FIG.

PREPARED BY:	SCALE
APPROVED BY: E.S. DATE: FEB. 82	DRAWING No. 5.1

6.0.0 RECOMMENDATIONS

It is recommended that all coal licences held in the Mount Greer licence block be surrendered.

7.0.0 SELECTED BIBLIOGRAPHY

Adamson, R.S., Street, P.J. and Campbell, D.D.: Less Developed Thermal Coal Deposits of British Columbia; Dolmage, Campbell and Ass., Vancouver, 1974.

Tipper, H.W.: Nechako River Map Area - British Columbia; Dept. of Mines and Technical Surveys, G.S.C. Memoir 324.

APPENDIX I

Legal Description of Licences

MT. GREER

Licence	Map	Block	Units	Hectares
7020	93-F-15	H	21, 22, 31, 32	306
7021	93-F-15	H	41, 42, 51, 52	306
7022	93-F-16	E	3, 4, 13, 14 (except lot 1338)	278
7023	93-F-16	E	5, 6, 15, 16 (except lots 1326, 1327, 1338)	76
7024	93-F-16	E	7, 8, 17, 18 (except lots 1323, 1326, 1327)	37
7025	93-F-16	E	9, 10, 19, 20 (except lot 1323)	244
7026	93-F-16	E	23, 24, 33, 34	306
7027	93-F-16	E	25, 26, 35, 36 (except lot 1327)	283
7028	93-F-16	E	27, 28, 37, 38 (except lot 1327)	159
7029	93-F-16	E	29, 30, 39, 40	306
7030	93-F-16	E	43, 44, 53, 54	306
7031	93-F-16	E	45, 46, 55, 56	306
7032	93-F-16	E	47, 48, 57, 58	306
7033	93-F-16	E	49, 50, 59, 60	306
7034	Lot 1326:			259
	93-F-16	D	97, 98	
	93-F-16	E	7 (Ptn), 8 (Ptn) 17 (Ptn), 18 (Ptn)	
7035	Lot 1327:			259
	93-F-16	E	17 (Ptn), 18 (Ptn) 27 (Ptn), 28 (Ptn)	
7036	Lot 1338:			259
	93-F-16	D	95, 96	
	93-F-16	E	5 (Ptn) 6 (Ptn) 15 (Ptn), 16 (Ptn)	

APPENDIX II

Geology Map (1:50,000)

APPENDIX III

Drill Core Log

XXXXX

82/02/23 GULF CANADA RESOURCES INC. - COAL DIVISION - DRILL CORE LOG PAGE 1

PROJECT: MTG BLOCK: XX DATA SOURCE: RDH81001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	213.55	213.59	0.04			MUDSTONE	DK.GY.SLD ALL GREYS ARE GREY-GREEN.
	213.59	213.65	0.06			SANDSTONE	WEL.GY.SLD ALL GREYS ARE GREY-GREEN.
	213.65	213.79	0.14			MUDSTONE	GY.SLD ALL GREYS ARE GREY-GREEN.
	213.79	214.19	0.40			SANDSTONE	MOD.GY.SLD ALL GREYS ARE GREY-GREEN; CORE BROKEN I N MIDDLE.
*	214.19	214.26	0.07			MUDSTONE	GY.SLD
	214.26	214.96	0.70			SILTSTONE	GY.SLD SANDY AT BASE.
	214.96	215.16	0.20			SANDSTONE	WEL.GY.SLD
*	215.16	215.29	0.13			SILTSTONE	GY.SLD THIN COAL BANDS IN PART.
	215.29	215.85	0.56			MUDSTONE	GY.SLD

* DENOTES MEASURED BCA

XXXXX

PROJECT: MTG BLOCK: XX DATA SOURCE: RDH81001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	215.85	216.01	0.16			SILTSTONE	GY.SLD
	216.01	216.32	0.31			MUDSTONE	GY.SLD IRREGULAR COAL FRAGMENTS UP TO 5 CM THICK.
	216.32	216.41	0.09			SANDSTONE	WEL.GY.SLD
	216.41	217.18	0.77			MUDSTONE	DK.GY.SLD MINOR CARB PLANT FRAGMENTS IN PART.
*	217.18	217.79	0.61			MUDSTONE	SLTY.DK.GY.SLD PLANT FRAGMENTS IN PART.
	217.79	217.82	0.03			SANDSTONE	CG.MOD.GY.SLD
	217.82	218.24	0.42			MUDSTONE	SLTY.DK.GY.SLD
	218.24	218.64	0.40			MUDSTONE	DK.GY CORE BROKEN IN MIDDLE.
	218.64	218.87	0.23			MUDSTONE	SLTY.DK.GY.SLD

* DENOTES MEASURED BCA

XXXXX

PROJECT: MTG BLOCK: XX DATA SOURCE: RDH81001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	218.87	218.94	0.07			MUDSTONE	DK.GY.SLD
	218.94	219.26	0.32			CORELOSS	ROCK
	219.26	219.46	0.20			MUDSTONE	AS ABOVE; INITIALLY CORED ON LAST CORE RUN.
*	219.46	219.93	0.47			MUDSTONE	DK.GY.SLD MINOR CARB LAYERS IN MIDDLE.
	219.93	219.95	0.02			SANDSTONE	CG.MOD.GY.SLD
	219.95	220.21	0.26			MUDSTONE	DK.GY.SLD
*	220.21	220.60	0.39			SANDSTONE	MG.WEL.GY.SLD MINOR MUDSTONE INTERBEDS GRADATIONAL CONTACT AT TOP.
*	220.60	220.93	0.33			MUDSTONE	DK.GY.SLD MINOR PLANT FRAGMENTS AND COAL FRAGMENTS.
	220.93	221.40	0.47			SANDSTONE	MG.WEL.GY CORE BROKEN IN MIDDLE.

* DENOTES MEASURED BCA

*
XXXXX

PROJECT: MTG BLOCK: XX DATA SOURCE: RDH81001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	221.40	221.71	0.31			MUDSTONE	DK.GY.SLD MINOR PLANT FRAGMENTS.
	221.71	221.73	0.02			SANDSTONE	MG.WEL.GY.SLD
*	221.73	222.19	0.46			MUDSTONE	DK.GY MINOR CARB LAMINATIONS.
	222.19	222.36	0.17			MUDSTONE	CARB.DK.BWN.BRKN COLOUR IS BLACK TO BROWN TOWARDS BASE; MINOR COAL LAMINATIONS.
	222.36	222.58	0.22			CORELOSS	ROCK.
	222.58	222.77	0.19			SILTSTONE	GY.SLD
	222.77	222.85	0.08			CORELOSS	ROCK.
	222.85	222.92	0.07			SANDSTONE	MG.WEL.GY CORE BROKEN AT TOP.
	222.92	222.98	0.06			MUDSTONE	DK.GY.SLD
	222.98	223.08	0.10			SANDSTONE	MG.WEL.GY.SLD

* DENOTES MEASURED BCA

XXXXX

PROJECT: MTG BLOCK: XX DATA SOURCE: RDH81001

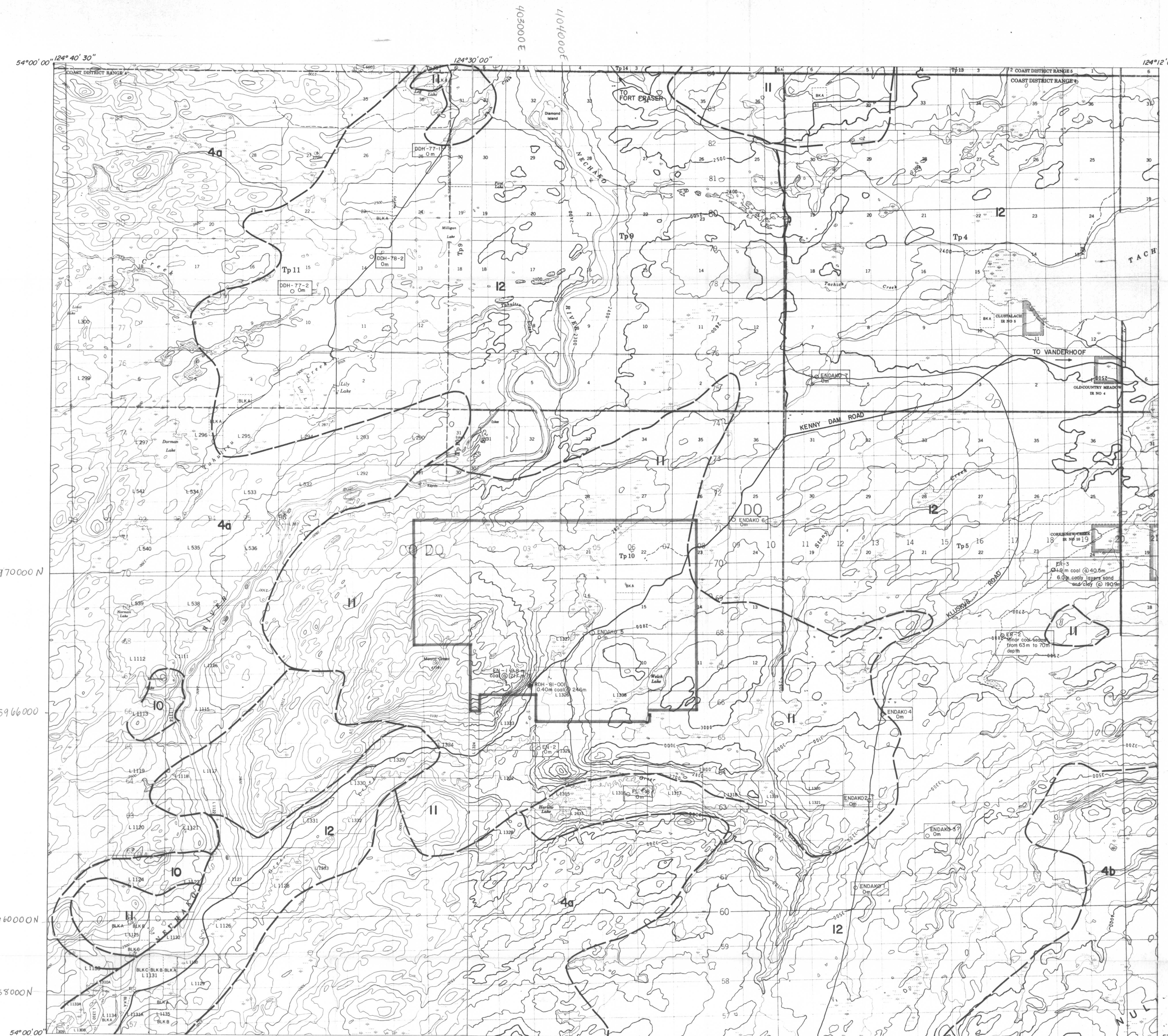
BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	223.08	223.11	0.03			MUDSTONE	DK.GY.SLD
	223.11	223.23	0.12			SANDSTONE	MG.WEL.GY.SLD
*	223.23	223.96	0.73			MUDSTONE	DK.GY.SLD CARB LAMINATIONS IN MIDDLE.
	223.96	224.04	0.08			MUDSTONE	AS ABOVE.
*	224.04	224.17	0.13			SILTSTONE	SLD SLIGHTLY CARB AT TOP.
	224.17	224.51	0.34			MUDSTONE	DK.GY.SLD
	224.51	224.59	0.08			CORELOSS	ROCK.
	224.59	224.86	0.27			SANDSTONE	MG.WEL.GY CORE BROKEN AT TOP; MINOR MUDSTONE INTE RBEDS.
*	224.86	224.97	0.11			MUDSTONE	DK.GY.THNB CARB IN PART; COLOUR IS GREY TO BLACK.
	224.97	225.00	0.03			SANDSTONE	MG.WEL.GY.SLD

* DENOTES MEASURED BCA

XXXXX

PROJECT: MTG BLOCK: XX DATA SOURCE: RDH81001

BCA	DEPTH FROM	DEPTH TO	INTRVAL THICK.	SAMP. ID	SEAM ID	LITHOLOGY	DESCRIPTION
	225.00	225.11	0.11			MUDSTONE	GY.THNB.SLD WAVY BED LAMINATIONS; COLOUR IS LIGHT T O DARK GREY.
*	225.11	225.35	0.24			MUDSTONE	DK.GY.SLD
	225.35	225.43	0.08			CORELOSS	ROCK.
	225.43	225.55	0.12			SANDSTONE	MG.WEL.GY CORE BROKEN AT TOP. AT 225.55-BASE OF C ORING INTERVAL; CIRCULATION LOST.

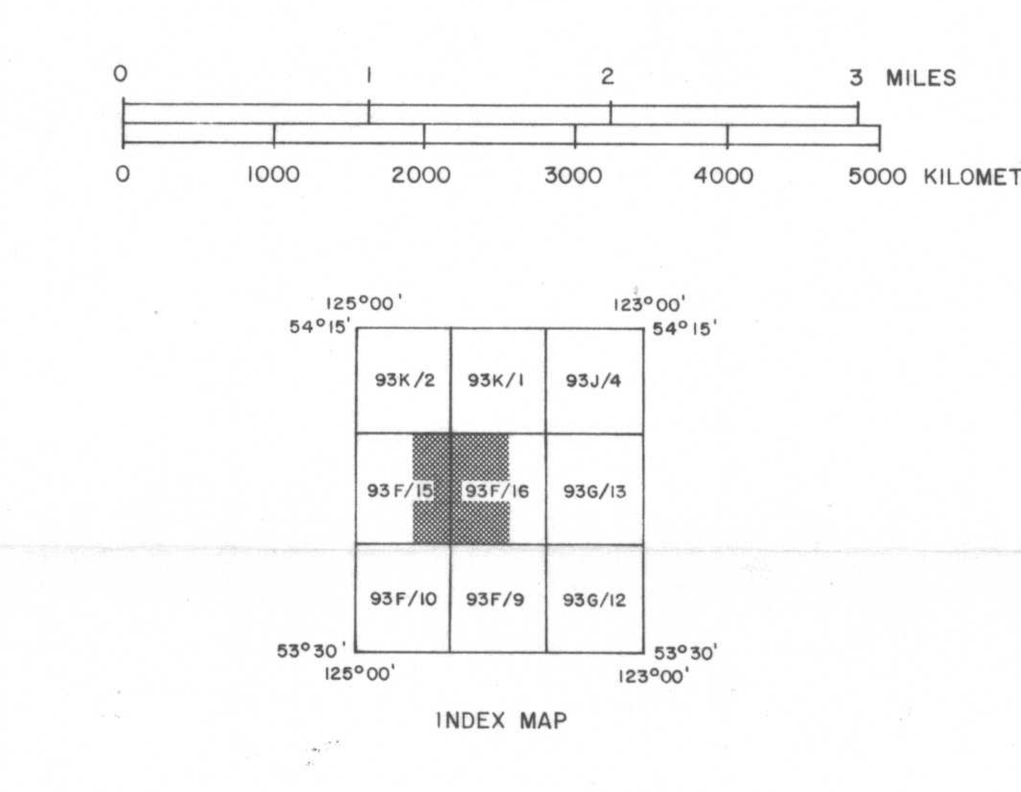


LEGEND

- CENOZOIC
  - QUATERNARY — PLEISTOCENE AND RECENT
    - **12** — *Till, gravel, sand, clay, and silt*
  - TERTIARY — MIOCENE AND (?) LATER — ENDAKO GROUP
    - **11** — *Vesicular and amigdaloidal andesite and basalt; flow breccia, tuff, conglomerate, greywacke, and lignite; 11a, necks, plugs and dykes*
  - PALEOCENE (?), EOCENE, AND OLIGOCENE — OOTSA LAKE GROUP (in part)
    - **10** — *Rhyolite, dacite, and associated tuffs and breccias; minor andesite, basalt, and conglomerate; 10a, rhyolitic and dacitic dykes, necks, and stocks*
- MESOZOIC
  - CRETACEOUS AND (?) TERTIARY — UPPER CRETACEOUS AND (?) PALEOCENE — OOTSA LAKE GROUP (in part)
    - **9** — *Basalt, andesite, and related tuffs and breccias; minor rhyolite and dacite; 9a, conglomerate and greywacke.*
  - JURASSIC AND/OR CRETACEOUS — UPPER JURASSIC AND/OR CRETACEOUS
    - **8** — *Granite, quartz diorite, granodiorite, and diorite*
  - JURASSIC — UPPER JURASSIC
    - **7** — *Argillite and argillaceous limestone*
  - MIDDLE JURASSIC — HAZELTON GROUP (in part)
    - **6** — *Greywacke, argillite, conglomerate, tuff, breccia, andesite, and arkose; minor rhyolite*
  - MIDDLE AND (?) LOWER JURASSIC — HAZELTON GROUP (in part)
    - **5** — *Andesite, related tuffs and breccias, chert pebble conglomerate, shale, and sandstone; 5a, mainly volcanic rocks; 5b, mainly sedimentary rocks*
  - LOWER JURASSIC — TOPLEY INTRUSIONS
    - **4** — *4a, granite and granodiorite; 4b, diorite and quartz diorite*
  - TRIASSIC AND JURASSIC — UPPER TRIASSIC AND LOWER JURASSIC — TAKLA GROUP (2,3)
    - **3** — *Red and brown shale, conglomerate, and greywacke*
    - **2** — *Andesitic and basaltic flows, tuffs and breccias; interbedded argillite and minor limestone*
- PALÆOZOIC
  - PENNSYLVANIAN (?) AND PERMIAN — CACHE CREEK GROUP
    - **1** — *Limestone*

LEGEND

- *HARD SURFACE ROAD, ALL WEATHER*
- *LOOSE SURFACE ROAD*
- *CART TRACK, WINTER ROAD, UNDER CONSTRUCTION*
- *TRAIL, CUTLINE, PORTAGE*
- *BUILT UP AREA*
- *RAILWAY, SIDING, STATION, STOP*
- *BRIDGE*
- *INDIAN RESERVE, PARK, ETC.*
- *LAKE, INTERMITTENT*
- *MARSH OR SWAMP, WOODED*
- *CONTOURS*
- *APPROXIMATE CONTOUR*
- *DEPRESSION*



- OUTCROP (VOLCANIC)
- DRILL SITE LOCATION - G.C.R.I. - 1981 Program
- DRILL SITE LOCATION - Pre-1981 results by other operators
- LICENCE BOUNDARY
- GEOLOGICAL CONTACT (APPROXIMATE)

GULF CANADA RESOURCES INC.
Coal Division
CALGARY ALBERTA
Gulf

MOUNT GREER

GEOLOGIC MAP
(as taken from G.S.C. 1962)
1:50,000

26

PREPARED BY:		DRAWING No.
APPROVED BY:	DATE:	

CB - Mount Greer 81(2)*A *1

CB-Mt. Greer 81(3)A #1

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

SIDEWALL DENSILOG
CALIPER

FILE NO. 26

LSD
SEC
TWP
RGE
W M

COMPANY GULF CANADA RESOURCES
WELL RDH 81 -001
LOCATION 40-30-10E 59-64-700N
FIELD MT GREER
PROVINCE BRITISH COLUMBIA

Other Services: DIR
FBL 20, GRN

Permanent Datum GROUND LEVEL Elev.
Log Measured from GROUND LEVEL Above Perm. Datum
Well Depths Measured from GROUND LEVEL

K.B.
CSG
G.L.

200 METRIC

Run No.	ONE
Date	14 DEC 1981
First Reading	198
Last Reading	00
Footage Logged	198
Depth Reached	198.1
Depth Driller	307
Casing Roke	5.7
Casing Driller	7.2
Fluid Type	WATER
Liquid Level	
Min. Diam.	160MM
Operating Time	1 HR
Truck No.	38
Recorded By	MURRAY
Witnessed By	SWANBERGSON

GENERAL				GAMMA RAY				SIDEWALL DENSILOG			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	API G.R. UNITS PER LOG DIV.	T.C. SEC.	SENS SETTINGS	ZERO DIV.L OR R	CPS/DIV
ONE	00	198	7.1					0.5	5K	2.80R	261.93

REMARKS DENS TOOL 457AS
CALIPER TOOL 785

C6-Mount Greer 81(3)A #1

ROKE OIL ENTERPRISES LTD. CALGARY, ALBERTA

GAMMA RAY NEUTRON LOG

FILE NO.	
LSD / SEC / TWP / RGE / W M	
COMPANY	GULF CANADA RESOURCES
WELL	RDH - 81 - 001
LOCATION	40-30-10E 59-64-700N
FIELD	MT GREER
PROVINCE	BRITISH COLUMBIA
Other Services:	DIR FBL 20, DENS-CAL
Permanent Datum	GROUND LEVEL Elev.
Log Measured from	GROUND LEVEL Above Perm. Datum
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	
	200 METRIC

26

Run. No.	ONE
Date	16 DEC 1981
First Reading	277
Last Reading	00
Footage Logged	277
Depth Reached	277.6
Depth Driller	307
Casing Roke	5.7
Casing Driller	7.1
Fluid Type	WATER
Liquid Level	19
Min. Diam.	160MM
Rm @	62.5 @ 7.1°C
Operating Time	2 HRS
Truck No.	38
Recorded By	MURRAY
Witnessed By	SWANBERGSON

EQUIPMENT DATA

GAMMA RAY		NEUTRON	
RUN NO.	ONE	RUN NO.	ONE
TOOL MODEL NO.	125A011	LOG TYPE	NEUTRON/NEUTRON
DIAMETER	31.75MM	TOOL MODEL NO.	125A011
DETECTOR MODEL NO.		DIAMETER	31.75MM
TYPE	SCINTILLATION	DETECTOR MODEL NO.	
LENGTH	10.16CM	TYPE	PROPORTIONAL
DISTANCE TO N. SOURCE	2.38M	LENGTH	15.24CM
		SOURCE MODEL NO.	MRC-N-SS-W
GENERAL		SERIAL NO.	50
HOIST TRUCK NO.	38	SPACING	38.1CM
INSTRUMENT TRUCK NO.	38	TYPE	AmBe
TOOL SERIAL NO.	125A011	STRENGTH	3 CURIES

LOGGING DATA

GENERAL				GAMMA RAY				NEUTRON			
RUN NO.	DEPTHS FROM	DEPTHS TO	SPEED M/MIN	T.C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API G. R. UNITS PER LOG DIV.	T. C. SEC.	SENS SETTINGS	ZERO DIV. L OR R	API N. UNITS PER LOG DIV.
ONE	00	18	4.5	3.0	100	0	30	3.0	5000	3L	300
ONE	18	277	3.5	3.0	100	0	30	3.0	500	3L	30

REMARKS LOGGED OPEN HOLE

GAMMA RAY	DEPTHS	NEUTRON
GAMMA RAY INCREASES →		NEUTRON INCREASES →
API 30		API 300
0 150 300		900 2400 3900 5400 6900

CB- Mount Greer 81(3)A #1

ROKE

OIL ENTERPRISES LTD. CALGARY, ALBERTA

FOCUSED BEAM LOG

FILE NO.	
LSD	
SEC	
TWP	
RGE	
W M	
COMPANY	GULF CANADA RESOURCES
WELL	RDH - 81 -001
LOCATION	40-30-10E 59-64-700N
FIELD	MT GREER
PROVINCE	BRITISH COLUMBIA
Other Services:	DIR GRN, DENS-CAL
Permanent Datum	GROUND LEVEL
Elev.	
Log Measured from	GROUND LEVEL
Above Perm. Datum	
Well Depths Measured from	GROUND LEVEL
K.B.	
CSG	
G.L.	
	200 METRIC

26

Run. No.	ONE		
Date	16 DEC 1981		
First Reading	275		
Last Reading	21		
Footage Logged	254		
Depth Reached	275.1		
Depth Driller	307		
Casing Roke	5.7		
Casing Driller	7.1		
Fluid Type	WATER		
Liquid Level	21		
Min. Diam.	160MM		
Rm @ °C	62.5 @ 7.1		
Operating Time	2½ HRS		
Truck No.	38		
Recorded By	MURRAY	Witnessed By	SWANBERGSON

Remarks FBL # 7 CURRENT RANGE HIGH MUDFISH RESISTANCE 2 OHMS

7 ELECTRODE SONDE 20 CM BEAM WIDTH 100 CM ARRAY

PRIMARY 5 OHM/DIV SECONDARY 20 OHM/DIV

RESISTIVITY (OHM-METERS)	Depths	RESISTIVITY (OHM-METERS)
SECONDARY SCALE 0 100 200		PRIMARY SCALE 0 25 50 75 100 / 260 360 460 560 660