Province of
British Columbia

Ministry of
Energy, Mines and
Petroleum Resources

Parliament Buildings
Victoria
British Columbia
V8V 1X4

August 23, 1984

John Fisher
Project Geologist
Suncor Inc.
500-4th Avenue, S.W.
Calgary, Alberta
T2P 2V5

Dear Mr. Fisher:

The report of work entitled Mt. Jackson 1982 has been reviewed, however before final approval can be granted the report must be amended to comply with the following sections of the Coal Act Regulations:

Section 8(9) Bar scales, (10) Lat & Longs, (13) map Nos, (14) map size

Section 10 Coal analyses ✓ Locations on Geological Map

Your report will be held in abeyance pending submission of the amendments.

If you have any questions concerning the amendments, please contact Alex Matheson at (604) 387-1301.

Sincerely,

Kim Stone

Kim Stone

for Paul Hagen
Coal Administrator

kjs

107(1)

GEOLOGICAL APPRAISAL OF THE MT. JACKSON COAL PROPERTY

BRITISH COLUMBIA

(N.T.S. 104A/16)
56°50' N. 128°10' W.

A REPORT OF THE 1982 FIELD EXPLORATION ACTIVITIES

CL # 7352 - 7380

7365, 7368, 7375 - 7380 forfeited Feb 19, 1983.

BY:
John Davies, M.Sc., P.Geol.,
Coal Project Geologist,
Suncor Inc. Resources Group,
500 - 4th Avenue S.W.,
Calgary, Alberta

Work done Feb 18, 1982 to Feb 18, 1983

submitted Dec 1, 1982

## SUMMARY

Suncor's Mt. Jackson coal property comprises 6903 hectares and is located in the Skeena Mountains of north-central British Columbia, some 230 km north-northwest of Smithers.

The occurrence of coal in the area has been known since the beginning of the century and many surveys have since been conducted. The coalfield is still, however, undeveloped although in the last decade the B.C. Railway roughed-out a rail bed through the area.

The 1982 field exploration conducted by Suncor was limited to recording coal outcrops and collecting samples for analyses. This was accomplished using a two man field crew working out of a fly camp on the property.

The Groundhog coalfield occupies the northeastern part of the Middle Jurassic-Lower Cretaceous Bowser Basin. The coal-bearing sequence was the result of southwesterly pro-grading deltas fed by sediment from the Omineca Mountains to the northeast. Post depositional tectonic activity has resulted in severe deformation of the strata. Thrust and block faults, tight folding and overturned strata are all represented as well as relativel shallow dipping beds.

The lithologies present within the property are typically, sandstone, siltstone, mudstone, shale and coal with minor conglomerate. Coal occurrences are numerous, particularly on Mt. Jackson and in the Grizzly Gulch area. The coal is anthracitic in rank and in places reaches meta-anthracite. Most seams are between 1.0 and 4.0 metres thick, although a seam near Falconer Mountain showed a possible thickness of 11 metres.

The high rank of the coals appears to be due to thermal metamorphism caused by intrusion of a large igneous body, possibly in the early Cretaceous.

For the 1983 exploration season, it is recommended that 1896 hectares of land be dropped in the northeast and 1552 hectares acquired to the southeast. The field program should incorporate trenching, drilling, mapping, sampling, testing and aerial photography to establish the most favourable areas for coal development within the property.

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## Introduction

### 1.1 Location

The Mt. Jackson coal licences of Suncor Inc. are situated approximately 230 km north-northwest of Smithers and 140 km north-east of Stewart, British Columbia. The property lies within N.T.S. Sheet 104A/16 (McEvoy Flats) and its location is shown in Fig. 1.

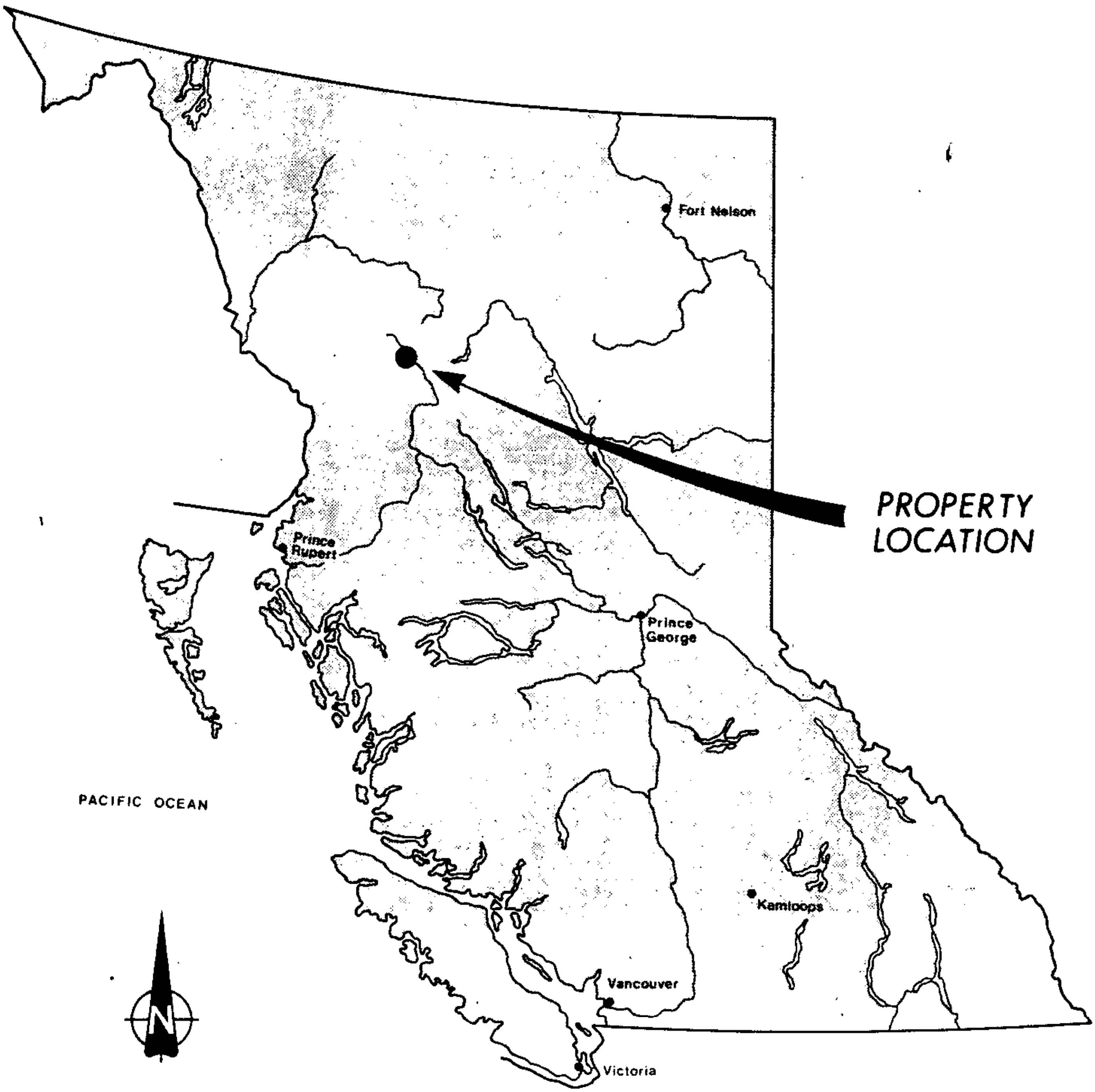
The B.C. Railway, Dease Lake to Fort St. James rail bed, runs through the property, but the actual track terminates at Chipmunk Creek some 25 km to the south. The rail bed is drivable to the Kluatantan River but the section through the property has only been roughed-out. However, during the construction of the railway, gravel airstrips were built for supply flights and one of these airstrips is located at the confluence of the Kluatantan and Skeena rivers just inside Suncor's property.

The only feasible method of access into much of the licences is by helicopter, although old pack trails do exist. These trails, which extend along the Skeena and southwestwards up Trail Creek, have not been used since 1948 and are now barely discernable.

### 1.2 Land Status

On 5th January, 1982, Suncor applied for coal licences covering 7,222 hectares of land in the vicinity of Mt. Jackson in the Groundhog coal field. On 19th February, 1982, the Provincial Government granted the company 29 licences totalling 6903 hectares. These licences extend from Mt. Jackson in the south to Telfer Creek and Pyramid Bluff in the north and from Currier Creek in the west to the headwaters of Taylor Creek in the east.

A map showing the location of the individual coal licences is contained in Fig. 2 and a list of the licences, areas and date of issue is given in Table 1.




Suncor inc Resources Group — COAL AND MINERALS DEPARTMENT

MT. JACKSON COAL LICENCES
LOCATION MAP

FIGURE 1

| DATE | SCALE | N T S | DRAWING No |
|---|---|---|---|
| 83-01 | 1" = 150 MI APPROX. | 104 A | |

TABLE 1

MT. JACKSON COAL LICENCES

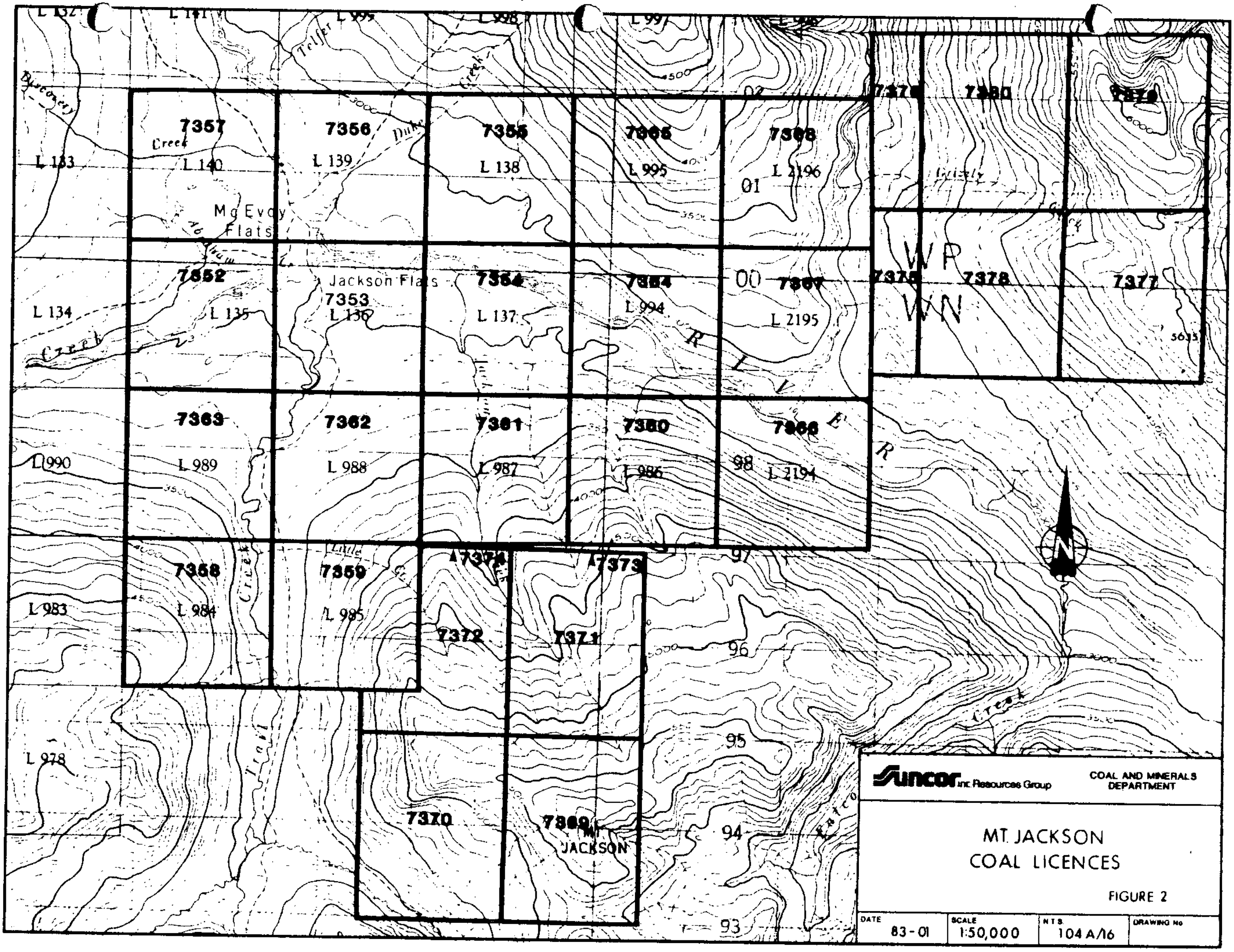
| LICENCE NO. | DATE ISSUED | MAP AREA | UNITS/LOT | HECTARES |
|---|---|---|---|---|
| 7369 | Feb. 19/82 | 104-A-16, Blk. B | 45, 46, 55, 56 | 284 |
| 7370 | Feb. 19/82 | 104-A-16, Blk. B | 47, 48, 57, 58 | 284 |
| 7371 | Feb. 19/82 | 104-A-16, Blk. B | 65, 66, 75, 76 | 284 |
| 7372 | Feb. 19/82 | 104-A-16, Blk. B | 67, 68, 77, 78 (Excl. Lot 987) | 176 |
| 7373 | Feb. 19/82 | 104-A-16, Blk. B | 85, 86, 95, 96 (Excl. Lots 986, 987) | 12 |
| 7374 | Feb. 19/82 | 104-A-16, Blk. B | 87, 88, 97, 98 (Excl. Lots 985, 987, 988) | 7 |
| 7375 | Feb. 19/82 | 104-A-16, Blk. G | 1, 2, 11, 12 (Excl. Lots 2195, 2196) | 116 |
| 7376 | Feb. 19/82 | 104-A-16, Blk. G | 21, 22, 31, 32 (Excl. Lots 996, 2196) | 116 |
| 7377 | Feb. 19/82 | 104-A-16, Blk. H | 7, 8, 17, 18 | 284 |
| 7378 | Feb. 19/82 | 104-A-16, Blk. H | 9, 10, 19, 20 | 284 |
| 7379 | Feb. 19/82 | 104-A-16, Blk. H | 27, 28, 37, 38 | 284 |
| 7380 | Feb. 19/82 | 104-A-16, Blk. H | 29, 30, 39, 40 | 284 |
| (Lot Nos. in N.T.S. 104-A-16, Blks. B, C, F and G) | | | | |
| 7352 | Feb. 19/82 | 135 | | 264 |
| 7353 | Feb. 19/82 | 136 | | 264 |
| 7354 | Feb. 19/82 | 137 | | 264 |
| 7355 | Feb. 19/82 | 138 | | 264 |
| 7356 | Feb. 19/82 | 139 | | 264 |
| 7357 | Feb. 19/82 | 140 | | 264 |
| 7358 | Feb. 19/82 | 984 | | 264 |
| 7359 | Feb. 19/82 | 985 | | 264 |
| 7360 | Feb. 19/82 | 986 | | 264 |

## TABLE 1

## MT. JACKSON COAL LICENCES

| LICENCE NO. | DATE ISSUED | MAP AREA | UNITS/LOT | HECTARES |
|---|---|---|---|---|
| 7361 | Feb. 19/82 | | 987 | 264 |
| 7362 | Feb. 19/82 | | 988 | 264 |
| 7363 | Feb. 19/82 | | 989 | 264 |
| 7364 | Feb. 19/82 | | 994 | 264 |
| 7365 | Feb. 19/82 | | 995 | 264 |
| 7366 | Feb. 19/82 | | 2194 | 264 |
| 7367 | Feb. 19/82 | | 2195 | 264 |
| 7368 | Feb. 19/82 | | 2196 | 264 |

Total 29 Licences, 6903 hectares



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L 986
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L 983
L 984
L 985
L 978
Mc Evoy Flats
Jackson Flats
WP
WN
Creek
Telfer
Duke
Grizzly
Little
Trail
RIVER
MT JACKSON
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94
93
Suncor inc Resources Group
COAL AND MINERALS DEPARTMENT
MT. JACKSON
COAL LICENCES
FIGURE 2
DATE 83-01
SCALE 1:50,000
N.T.S. 104 A/16
DRAWING No

## 1.3 Previous Work

The earliest reference to coal occurrences in the Groundhog Coalfield was in 1899 by V. H. Dupont of the Federal Department of Railways. In 1900 a Geological Survey report announced the possibility of large volumes of anthracitic coal of Cretaceous age, in the area.

In 1903 J. McEvoy explored the area for commercial coal occurrences and found a 6 ft. seam on Discovery Creek. On the strength of this exposure and other indications, he staked claims covering 14 square miles. The following year W. W. Leach staked an additional 16 square miles on behalf of the Western Development Company. Further large claims were acquired by the B.C. Anthracite Company between 1909 and 1912. In 1911 and 1912 G. S. Malloch of the Geological Survey examined the coal field and a summary of his report is to be found in "Coal Fields of British Columbia", 1915. He measured three sections, including one on Mt. Jackson where he recorded 17 separate coals from 1 ft to 6 ft. thick.

Little further work was done on the area until 1948 when a Geological Survey party under A. F. Buckham and B. A. Latour remapped the coal field. The results of this survey are published in G.S.C. Bulletin 16 - "The Groundhog Coalfield, British Columbia". Over 60 separate coal localities were recorded throughout the coal field, several of which included more than one seam. The coal bearing strata were assigned to the Lower Cretaceous Hazelton Group.

In 1968 Coastal Coal Ltd. sent a party of geologists to examine claims staked two years previously. The following year Placer Development, Quintana Minerals and the National Coal Corporation mapped 200 square miles and drilled 6 holes. They concluded that the possible reserves could total 4 billion tons.

In 1973, 1976 and 1979 the Geological Survey instigated work in the Groundhog area and Bowser Basin in general. This work was of a regional reconnaissance nature, primarily investigating depositional and structural trends and included only minor work on the coals.

Over the past two to three years, several major companies have acquired coal exploration licences in the area, including Petro-Canada, Esso and Gulf. At the time of writing, only Suncor, Gulf and Groundhog Coal have interests in the coalfield.

## 1.4 Physiography

The property lies within the Skeena Mountain range of north-central British Columbia. Maximum relief is of the order of 1,000 metres, with peaks over 1800 metres and the lowest valley bottoms at 800 metres. The highest elevations within the licence blocks are attained in the vicinity of Pyramid Bluff in the northeast and Mt. Jackson in the south. From these areas, the ground slopes steeply down to the Skeena Valley which trends from west-northwest to east-southeast through the property. The majority of the relatively level ground occurs in the McEvoy/Jackson Flats area at the confluence of the Skeena River and Currier Creek.

The principal river of the area is the Skeena, which has its source some 40 km to the northwest. It flows in a southeasterly direction through the property, before turning south and westwards to enter the Pacific Ocean at Prince Rupert. To the east of the Skeena, within the licences, the principal tributary is the south flowing Kluatantan River which enters the Skeena about 1 km west of the property boundary. The only tributary of the Kluatantan worthy of note is the west flowing Grizzly Creek which drains Grizzly Mt. Only one further south flowing creek affects the property, this being Duke Creek, which enters the Skeena at McEvoy Flats.

To the south of the Skeena, four principal creeks effect drainage of the property. The largest of these is Currier Creek which flows from the southwest and converges with the Skeena at McEvoy Flats. About 1 km to the north is Discovery Creek, the lower part of which traverses Suncor's licences. The northerly flowing Trail Creek, along which early explorers trekked, enters Currier Creek just before its confluence with the Skeena. It drains the western slopes of Mt. Jackson and has several small tributaries including Little Creek. The last creek worthy of mention is Jackson Creek which originates near the summit of

Mt. Jackson. It is entirely contained within the licences and enters the Skeena at the east end of Jackson Flats.

Apart from the B.C. Rail bed and an associated microwave tower, there has been no large scale clearing within the property. The pack horse route along Trail Creek and the coal adits are now almost totally overgrown. The only activities currently taking place are sporadic bouts of coal exploration and some trapping. A former exploration camp at the Kluatantan airstrip has recently been purchased by a local outfitter and may be used as a base for hunting.

The higher slopes and ridge tops above the tree line (about 1500 metres) are sparsely vegetated with alpine tundra. Lower slopes and most valley bottoms are densely covered by spruce, balsam, cottonwood and birch. Considerable quantities of deadfall make traversing a slow and laborious task. The only open areas covered by grassland and berry-bearing shrubs are around McEvoy and Jackson Flats.

The wildlife of the area comprises principally caribou, grizzly and black bear, moose, marmot and wolverine. Coho and steelhead are the principal species of fish inhabiting the Skeena and Kluatantan. They do not seem, however, to be anywhere as numerous as in rivers to the south.

## 1.5 1982 Field Work

Geological field work was carried out on the Mt. Jackson property between June and September 1982. The following personnel were involved throughout the project:

| | |
|---|---|
| John Davies | - Project Geologist |
| Rob Booker | - Party Chief |
| Rick Sereda | - Senior Geological Assistant |
| Mark Steacy | - Senior Geological Assistant |
| John Alguire | - Junior Geological Assistant |
| Norm Hopkins | - Junior Geological Assistant |
| Bruno Wiskell | - Junior Geological Assistant |

Dave Hocking - Pilot, Highland Helicopters
Mike Nagel - Pilot, Highland Helicopters

The project was coordinated with Suncor's exploration program at Sustut and the base camp at Bear Lake. A fly camp was established at 7 locations within the Mt. Jackson property, generally being moved on a weekly basis. A two man crew was assigned to the fly camp, which had radio contact with Bear Lake and B.C. Tel, on a one week rotation. The helicopter, based at Bear Lake, made a weekly supply flight to the fly camp for crew changes and to move the camp to a new location. The camp locations were picked so as to provide a central position from which reconnaissance mapping could be undertaken without requiring excessive walking.

In general, two days were lost per week due to bad weather and camp moves, leaving slightly less than 35 working days. The mapping accomplished was therefore limited to the principal rivers and creeks and to establishing the location of coal outcrops.

## 2. Regional Geology

### 2.1 Stratigraphy

The Groundhog Coalfield occupies the northeastern segment of the M. Jurassic - L. Cretaceous Bowser Basin. This was a successor of the Hazelton Trough, produced by uplift during the Bajocian which formed the Skeena Arch in the south and the Stikine Arch to the north. The eastern boundary of the basin was formed during the initial uplift and deformation of the Omineca Crystalline Belt, whilst to the west there was partial access to the open sea. Today, the western boundary is the Coastal Mountain Range.

The northeastern portion of the Bowser Basin was subject to accummulations of predominantly clastic sediments derived from the emerging Omineca Massif to the northeast. The environments of deposition ranged from fluvial through deltaic to pro-delta slope accompanied by a slow rate of subsidence.

Three facies types have been identified within the coal field, channel, overbank-channel and overbank facies. The channel facies are entirely fluvial and represented by fining upwards cycles of conglomerates and thickly bedded sandstones. These resistant beds form the peaks and ridges of the area.

The overbank facies comrises lithologies indicative of a low energy environment i.e. shales, siltstones, thin sandstones and coal seams. The recessive nature of this facies is reflected by a generally subdued topography.

The intermediate facies, the overbank-channel facies is transitional between the two. It contains more coarse grained sediment than the overbank facies, but is finer, with occasional coals, than the channel facies. Although the majority of the strata are of fluvial and deltaic origin, marine transgressions are not uncommon, however, they appear to have been of short duration.

## TABLE 2

### Stratigraphic Column

| FORMATION | AGE | LITHOLOGY |
|---|---|---|
| ALLUVIUM | HOLOCENE | |
| GLACIAL DEPOSITS | PLEISTOCENE | Till, Gravel and Sand |
| POPLAR BUTTE VOLCANICS | MIOCENE to PLIOCENE | Olivine Basalt |
| ENDAKO GROUP | LATE EOCENE to EARLY MIOCENE | |
| a) China Nose Breccia | Oligocene to Early Miocene | Basaltic Breccia |
| b) Buck Creek Volcanics | Late Eocene and Oligocene | Andesite and Dacite |
| GOOSLY LAKE INTRUSIVES | EOCENE | Syenomonzonite and Gabbro |
| BABINE INTRUSIVES | EOCENE | Diorite and Granodiorite |
| NASTBERG/NANIKA INSTRUSIVES | EOCENE | Felsite, Quartz Monzonite and Quartz Eye Porphyry |
| OOTSA LAKE GROUP | LATE CRETACEOUS to EOCENE | |
| a) Goosly Lake Volcanics | | Trachyte and Rhyolite |
| b) Tiptophill Volcanics | Maestrichtian | Andesite and Dacite |
| SUSTUT GROUP | LATE CRETACEOUS to EOCENE | |
| a) Brothers Peak Formation | Paleocene | Conglomerate, Sandstone, Tuff and Minor Coal |
| b) Tango Creek Formation | Cenomanian | Conglomerate, Sandstone and Minor Coal |
| BULKLEY INTRUSIVES | LATE CRETACEOUS | Granodiorite, Quartz Monzonite, (Axelgold Gabbro) |
| SKEENA GROUP | EARLY to LATE CRETACEOUS | |
| a) Brian Boru Formation | Cenomanian | Porphyritic Tuff and Andesitic Breccia |
| b) Red Rose Formation | Middle to Upper Albian | Greywacke, Sandstone, Shale and Coal |
| c) Rocky Ridge Volcanics | Albian | Augite Porphyry, Andesite and Breccia |
| d) Kitsun Creek Sediments | Hauterivian to Albian | Conglomerate, Greywacke, Shale and Coal |
| OMINECA INTRUSIVES | EARLY CRETACEOUS | Granitic and Dioritic Intrusives |
| BOWSER LAKE GROUP | MIDDLE to LATE JURASSIC | |
| a) Upper | Oxfordian to Kimmeridgian | Sandstone, Shale, Conglomerate and Coal |
| b) Lower (Ashman Formation) (Trout Creek Bala/Netalzul Volcanics) | Callovian and L. Oxfordian | Shale and Sandstone with Minor Conglomerate and Greywacke |
| HAZELTON GROUP | EARLY to MIDDLE JURASSIC | |
| a) Smithers Formation | Bajocian and Bathonian | Sandstone, Greywacke, Shale Conglomerate, Minor Tuff |
| b) Nilkitkwa Formation | Pleinsbachian to Bajocian | Basalt Breccia and Tuff Grading up to Shale and Sandstone |
| (i) Red Tuff Member | | Tuff, Basalt, Andesite, Dacite and Rhyolite |
| | Toarcian and Bajocian | |
| (ii) Ankwell Member | | Andesite, Breccia, Tuff, Minor Greywacke and Limestone |
| c) Telkwa Formation | Sinemurian | Basaltic to Rhyolitic Lavas, Minor Greywacke and Shale |
| TOPLEY INTRUSIVES | EARLY JURASSIC | Quartz Monzonite, Quartz Diorite and Granodiorite |
| TAKLA GROUP | LATE TRIASSIC | Andesite, Basalt, Minor Greywacke and Argillite |
| ASITKA GROUP | PERMIAN | Rhyolite, Tuff, Andesite, Agglomerate, Minor Limestone |
| ULTRAMAFICS | CARBO-PERMIAN | Serpentinite |
| CACHE CREEK GROUP | CARBO-PERMIAN | Argillite, Marble, Chert, Basalt, |

## 2.2 Structure

The sediments have been subject to severe deformation with the development of open, tight and recumbent folds, faulting and thrusting. These movements were probably initiated at the end of the Jurassic and culminated with the uplift of the Coastal Mountain Range in the early Tetiary.

The direction of maximum movement was from the southwest which resulted in the alignment of the principal fold and fault axis in a northwest-southeast direction. Three main synclines have been recognized, these are the Mt. Beirnes Syncline in the southwest, the Skeena Valley Syncline in the centre and the Distingue Mountain syncline in the northeast. Three major thrusts have also been identified, the Klappan Thrust in the north, the Mt. Taylor-Table Mt. Thrust to the east and the Mt. Beirnes-Devils Claw Thrust in the west. The majority of the larger creeks and river valleys are thought to be fault controlled, forming a series of rectilinear blocks.

# 3. Property Geology

## 3.1 Stratigraphy

During the 1911-12 seasons, Malloch measured a section on the west side of Mt. Jackson. This section which is reproduced in Appendix III, covers some 500 metres of strata containing 17 individual coals. The associated lithologies are primarily interbedded shales and sandstones. Sections along the lower part of Trail Creek have been measured by several early workers and the section and sketch map of G. W. Evans, 1912 have been included in Appendix IV. As part of this summer's work, a further section was examined along Trail Creek and this is shown in Appendix V. G. W. Evans also measured a section near the top of Grizzly Gulch containing 285 metres of strata including 5 coal seams (Fig. 3).

The lithologies seen to outcrop within the property are described as follows:

Conglomerate - A minor constituent of the strata, generally containing pebbles of 5 to 10 mm diameter. The units are thickly bedded and contain a high percentage of volcanic material.

Sandstone - Typically medium to dark grey when fresh becoming brown to orange on weathering. Grain size varies from fine to coarse, although the majority encountered were medium grained. They tend to be poorly sorted and on occasion, friable. Cementation, where seen, is either calcite or silica. Individual grains are usually of quartz with a variable quantity of ferromagnesian minerals and minor shale inclusions. Rare ironstone concretions have been noted. Bedding is dominantly medium to thick although the finer grained varieties are thinly bedded and on occasion laminated.

Siltstone - A gradational unit in between the sandstones and mudstones. They form thin units, being similar in colour to the sandstones.

Mudstone - Medium to dark grey in colour when fresh and weathering to brownish-grey. They are almost always found as thinly bedded units with gradational lower boundaries and erosive tops. Where asociated with coal seams they become increasingly carbonaceous as the quantity of plant material increases.

Shale - True shales are most frequent to the south of Mt. Jackson where they form thick units probably marine in origin. They are black in colour with occasional ironstaining, being thinly laminated and brittle. In places they have been metamorphosed to a slate.

Coal - It is abundant throughout the property and will be described in more detail in section 4.

No igneous rocks were observed during the field season and none have been reported from within the coal field as a whole. It is, however, the author's opinion that large intrusive bodies exist beneath the coal bearing sediments and this effect upon coalification will be discussed in the next section.

The majority of measurements and descriptions of the strata within the property have been made upon outcrop in creeks and ridge tops. Below tree-line, with the exception of the creek sections, very little outcrop has been observed. It is therefore not possible to establish with any degree of certainty the continuity of individual stratigraphic units or coal seams.

The glacial cover on the lower slopes appears to be fairly thin, less than 10 metres, thickening in the valley bottoms to 20 to 30 metres. It is primarily boulder clay, although sands and gravels, which may in part be aluvial in origin, also occur.

The sequence of strata recorded on the Mt. Jackson property would seem to belong to the overbank facies previously described. The southerly extent of this coal forming environment appears to be just south of Mt. Jackson, where marine strata are found. The sandstones of this latter area contain thick pelecypod bands, probably representing beach sands. The shales originated in a deeper water environment, indicating an open sea to the southwest. The presence of marine fauna, including pelecypods, gastropods and belemnites, in several sandstone horizons throughout the property implies occasional marine transgressions. The presence of numerous, generally thin coal seams suggest that large volumes of sediment were brought into the floodplain by rivers, presumably originating from the erosion of the newly emergent Omineca belt, to the north and east. As the sediment was deposited in the channel bottoms, the rising water levels would breach the levees and periodically inundate the interdistributary swamps. As the water level receded, vegetation would be reestablished leading to the formation of another coal seam.

### 3.2 Structure

The geological structure of the property has not been sufficiently resolved to present a clear picture of the mechanisms involved. However, the variation in strike and dip direction and amount suggests that a complex structural regime has affected the area. The principal structural elements within the property conform to the regional pattern in that their trend is northwest to southeast.

The major synclinal axis within the licences is the Skeena Syncline which is followed by the Skeena valley. It extends into the property from the north, but becomes indistinct in the region of McEvoy Flats. Several minor cross folds are apparent on either limb. A series of parallel folds occurs from Grizzly Gulch eastwards towards the Duti River and a recumbent fold can be seen in association with the South Taylor Fault.

Dips within the property are generally shallow, between 10° and 40° although vertical readings have been noted.

Faulting has generally been inferred from topographic and air photo expressions. The principal fault appears to be a thrust or high angle reverse fault which extends to the southwest along the Skeena valley from McEvoy Flats. Unfortunately no indication has been obtained of its direction or amount of throw. A probable splay of this latter fault, called Deformation Fault, runs from Jackson Flats towards Deformation Peak and joins with Falconer Fault in the south. It appears to mark the boundary of the coal bearing strata, although there is considerable cover to the east of this fault.

The present course of Falconer Creek, to the southeast of the licences, appears to be fault controlled. Falconer Mt., immediately east of the creek, seems to be a fault block with Falconer Fault on its west and north sides, Notmy Fault to the east and Thompson Fault to the south.

Two faults have been recognized in the northeast part of the licence block, the Taylor North and Taylor South Faults. These merge to the northwest and are probably both thrusts, being associated with a recumbent fold immediately to the southwest.

Numerous minor faults and folds can be inferred from the dip and strike measurements recorded within the property, however, more detailed mapping in 1983 should clarify matters.

# 4. Coal

## 4.1 Distribution and Description

Within the Mt. Jackson property, coal occurrences are numerous. The most reliable outcrops for measurement and sampling are those found in creek sections where erosion is rapid and there is constant removal of sloughed material. Elsewhere, particularly on the north slope of Mt. Jackson above the tree line, coal seams are indicated by areas of bloom produced by slumping and solifluction. In the latter cases the actual solid coal outcrop may not be encountered by hand digging alone. Several coal samples throughout the property were obtained from bloom and cannot therefore be as representative of the seam as outcrop samples.

The distribution of coal seams within the property shows three concentrations. The greatest number of recorded coal occurrences is on the north facing slope of Mt. Jackson above the tree line and in the headwaters of Little and Jackson creeks. Between 20 and 30 separate coals were noted from this area, although many of these were coal bloom. It appears that at least four, and possibly as many as 8 or 10 seams outcrop on Mt. Jackson's north slope. Only one of these seams was trenched, the Durham seam at locality Fly 6, 0.5 km west of the summit of Mt. Jackson. The seam has a mudstone roof and floor and contains 4.5 metres of coal. Once mechanized trenching equipment is available, it will be possible to obtain accurate measurements on the remaining Mt. Jackson coals.

The second concentration of coals lies in the Jackson and McEvoy Flats area and includes the lower reaches of Trail and Jackson creeks. Here, 10 or 12 coals outcrop in river and creek sections. The best documented section is that along Trail Creek (see Appendix IV) where 5 coals are recorded, although faulting may have repeated one or more of the seams. In general, these seams range in thickness from 0.5 to 3.0 metres and contain thin partings of carbonaceous shale. Their dips vary between 10° and 70°, although the two thickest seams along Trail Creek have dips less than 20° to the northeast.

The final group of coals is that at the headwaters of Taylor Creek and Grizzly Gulch in the northeast. Within the property some 14 separate occurrences were noted, two of which, Grizzly No. 1 and Grizzly No. 2 were trenched during the summer. These seams were 0.85 and 1.8 meters thick respectively with mudstone and siltstone partings. In 1912, G. W. Evans measured a coal bearing section in Grizzly Gulch (Fig. 3). He recognized 5 seams, the thickest of which was slightlv less than 3.0 meters. It appears that the Grizzly No. 2 seam could correspond to Evans' 40c seam. The remaining coals in this area are less than 1.5 meters thick and tend to contain numerous dirt bands.

Four coal bearinq areas outside the property boundaries were also examined during the 1982 season. The first of these is the Taylor Creek, Pyramid Bluff and Operator Mountain area. Some 10 coal occurrences were recorded, the thickest seam being 4.0 meters at locality M43 to the south of Operator Mountain. However, all the seams contained a hiqh percentage of dirt partings and were structurally complex.

Two seams were sampled from localities 2JH and 2JC on the north bank of the Skeen River some 8 km downstream of its confluence with the Kluatantan. The thickes of these is 2JC which is 3.0 meters, whilst 2JH is 1.0 meters.

To the south of Mt. Jackson, alonq Jarrow Ridge three fairly thin coals (approximatelv 1.0 to 2.0 meters) were discovered. Accurate measurements were not possible due to the extent of weathering. It is thought that these coals lie close to the southern edqe of the coal basin.

The final area is located on the southwest slope of Falconer Mountain above Falconer Creek.. Five coal occurences were noted, the thickest being the Broon seam at locality Flc. This seam was trenched unsuccessfully, although upwards of 11 meters of coal were recorded with a further 6 meters of the seam covered. Again the extent of sloughing made accurate measurements impossible and it is probable that part of the trench followed the strike of the seam. Its lateral extent may be limited by the Thompson Fault.

FIGURE 3

## GRIZZLY GULCH COAL SECTION

(After G.W. Evans, 1912)

| | METERS |
|---|---|
| Strata | 60.60 |
| Yellow dirt | 0.08 |
| Impure coal and dirt | 0.15 |
| Coal and dirt mixed | 0.25 |
| Sandy shale, decomposed | 0.15 |
| Coal, cubical fracture, not clean | 1.14 |
| Shale grey | 0.09 |
| Coal and dirt in layers, quartz stringers | 0.84 |
| Strata | 16.50 |
| Coal impure, iron stained | 0.09 |
| Coal, impure, grey color, quartz stringers | 0.10 |
| Coal, cubical fractures | 0.10 |
| Shale, carbonaceous | 0.10 |
| Coal, impure platy | 0.25 |
| Shale, carbonaceous, quartz stringers | 0.18 |
| Coal impure | 0.43 |
| Strata | 28.00 |
| Coal, decomposed | 0.18 |
| Shale and clay | 0.30 |
| Coal, bright, cubical fracture | 0.30 |
| Dirt | 0.10 |
| Coal and stringers of dirt | 0.84 |
| Strata | 60.60 |
| Coal, impure | 0.38 |
| Carbonaceous shale | 0.13 |
| Coal, impure | 0.71 |
| Strata | 11.60 |
| Sandstone, massive, some clam shells | 3.66 |
| Strata | 17.68 |
| Impure shale and coal in bands, one or two 2-inch stringers of coal | 2.44 |
| Strata | 78.00 |
| TOTAL | 285.97 |

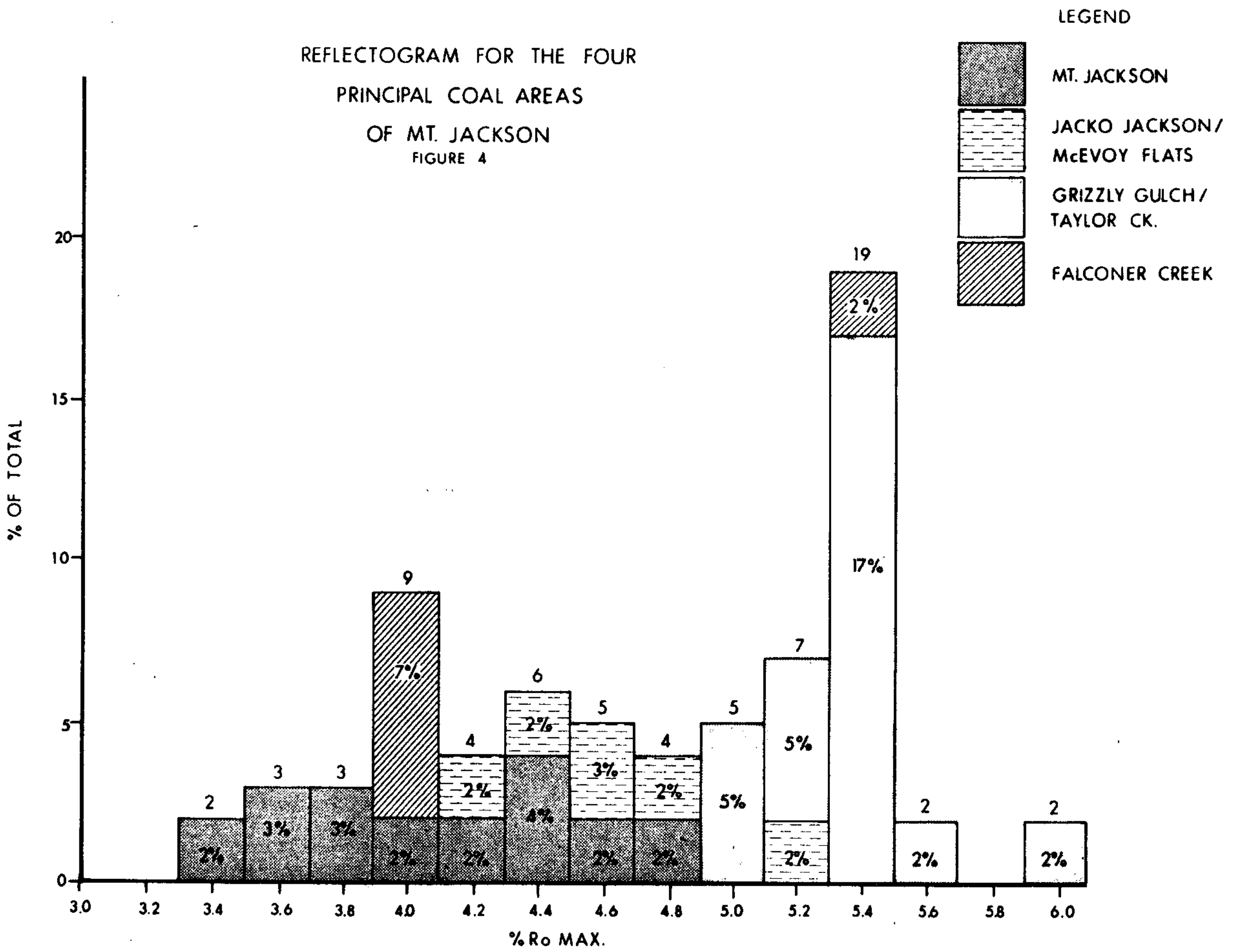
and considerable work involving trenching is required in this area. Trench descriptions from the 1982 program are included in Appendix VI.

## 4.2 Reflectance and Rank

It has for a long time been known that the coals of the Groundhog Coalfield were of high rank. However various analyses gave a range of rank classifications from medium volatile bituminous to meta-anthracite. The main problem has always been that coal rank determinations from chemical analyses, were affected by oxidation. The reflectance of vitrinite is a much more reliable indicator of rank and this parameter has been used to establish the rank of coals within the Mt. Jackson property and its immediate vicinity.

The reflectance results from the Mt. Jackson property are given in Appendix VII and have also been plotted in the reflectogram shown in Fig. 4. The lowest values come from the Mt. Jackson area and in fact the summit of Mt. Jackson shows the lowest readings, 3.4 to 3.6%. As the slopes are descended the reflectances gradually increase, although variations do occur within the general pattern. The Broon seam, east of Falconer Creek falls in the centre of the Mt. Jackson range and would therefore seem to be related to the coals in this latter area. In general, the coals of the McEvoy and Jackson Flats area are equivalent to the higher reflectance end of the Mt. Jackson coals. This suggests that there is a gradual increase in age, as would be expected, from the top of the mountain to the valley floor. The highest reflecting coals are those from the Skeena Valley, Grizzly Gulch, Taylor Creek and Operator Mountain areas. The majority of these coals fall in the 5.4% Ro region suggesting repetition of 1 or 2 coals of similar age. The highest reflecting coals of this area are probably meta-anthracites.

The exceptionally high rank of the Mt. Jackson coals has resulted from widespread metamorphism effective throughout the coal field. Evidence that this metamorphism was thermal in



REFLECTOGRAM FOR THE FOUR
PRINCIPAL COAL AREAS
OF MT. JACKSON
FIGURE 4
LEGEND
MT. JACKSON
JACKO JACKSON/
McEVOY FLATS
GRIZZLY GULCH/
TAYLOR CK.
FALCONER CREEK
% OF TOTAL
0
5
10
15
20
2
3
3
9
4
6
5
4
5
7
19
2
2
2%
3%
3%
7%
2%
2%
2%
2%
4%
2%
3%
2%
2%
2%
5%
5%
2%
17%
2%
2%
2%
2%
3.0
3.2
3.4
3.6
3.8
4.0
4.2
4.4
4.6
4.8
5.0
5.2
5.4
5.6
5.8
6.0
% Ro MAX.

origin comes from the aeromagnetic map for the Bowser Lake area (N.T.S. 104A) which shows a large positive anomaly centred over Falconer Creek (Fig. 5). It would seem therefore, that a large igneous body has been intruded into the sediments of this part of the Bowser Basin. As this intrusive does not outcrop, it has not been dated, although it has been demonstrated (Bostick et al., 1979) that a temperature of 220 to 250°c effective for 100 million years would produce coal of an anthracitic rank. Assuming this time-temperature relationship, the plutonic body could have been emplaced in the early Cretaceous, about the time inferred for the Omineca Instrusives.

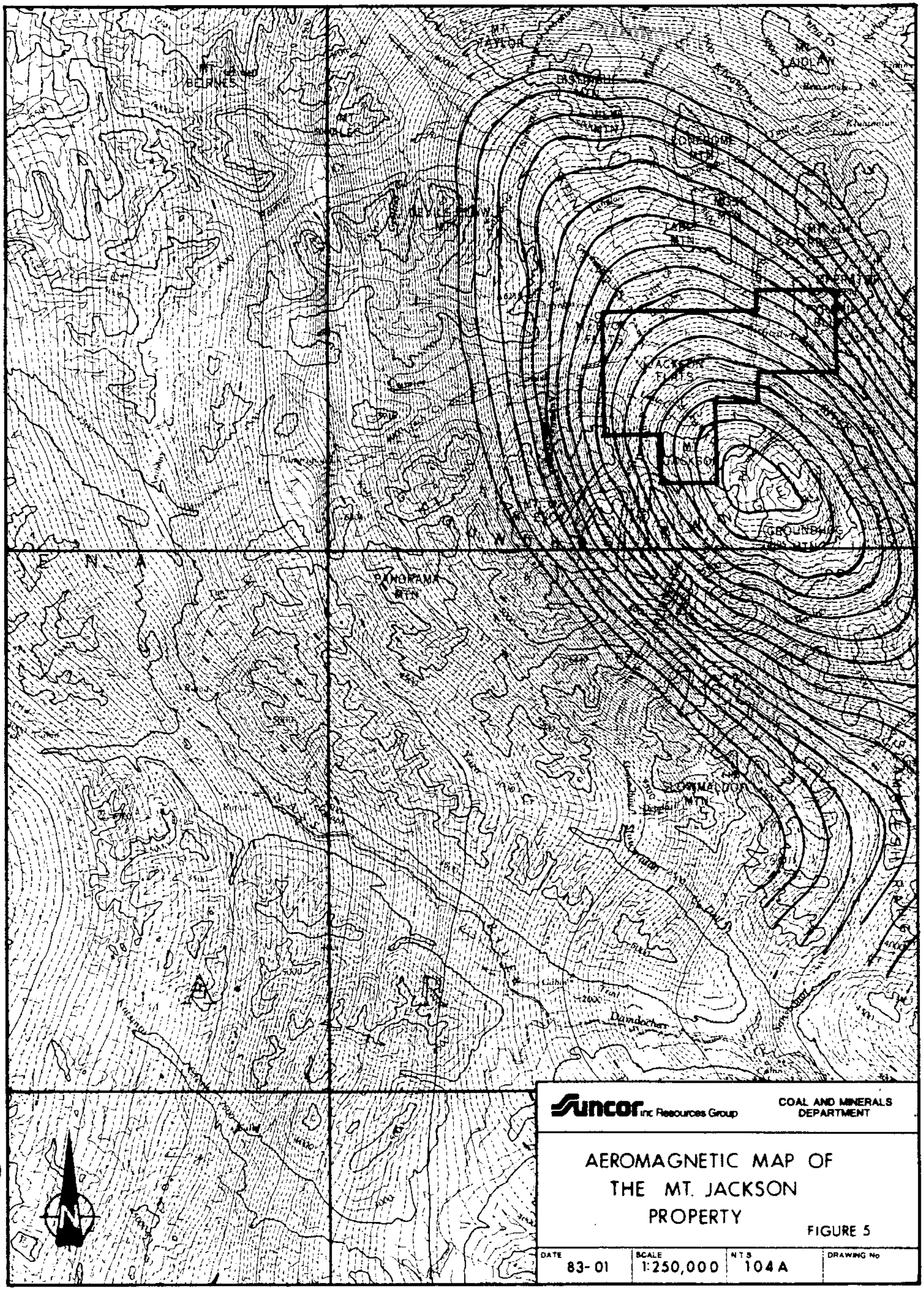
If this was the case, coalification must have occurred prior to imposition of the present structural pattern which resulted from the early Tertiary orogeny. Therefore, the coals presently exposed at the summit of Mt. Jackson would seem to be younger than those at Grizzly Gulch/Operator Mountain. However, the aeromagnetic map indicates a much steeper magnetic gradient over this latter area, suggesting that the intrusive body is closer to the surface at this point than at Mt. Jackson. A thinner sequence of sediments must therefore be present and the high geothermal gradient would have produced higher rank coals.

## 4.3 Quality

Selected coal samples from the property have been analysed for proximate, calorific value and sulphur content, the results of which are contained in Appendix VIII.

The fixed carbon content was converted to a dry mineral matter free basis, using the Parr Formula, to aid comparison. The Mt. Jackson and McEvoy/Jackson Flats coals show an average fixed carbon content of 92%, whilst the Grizzly Gulch area coals were slightly higher at 94%. Both figures are within the anthracite range. The two Skeena coals had a fixed cabon content of 75%, indicating a medium volatile bituminous rank.

Calorific values reach a maximum value within the medium volatile coals. Values for anthracites can be expected to be




Suncor inc Resources Group

COAL AND MINERALS DEPARTMENT

# AEROMAGNETIC MAP OF THE MT. JACKSON PROPERTY

FIGURE 5

| DATE | SCALE | N T S | DRAWING No |
|---|---|---|---|
| 83- 01 | 1:250,000 | 104 A | |

around 15,000 Btu/lb. The considerably lower results obtained in laboratory analyses is a function of both ash content and oxidation.

Ash contents were variable, with the Grizzly Gulch area coals showing consistantly high values. This reflects a higher inherent ash content of these coals and also suspect sampling. Lowest ash contents were recorded from the Mt. Jackson coals where values between 10% and 25% were common.

Sulphur contents were generally below 0.5% averaging 0.43% for Mt. Jackson, 0.40% for McEvoy/Jackson Flats and 0.31% for Grizzly Gulch, Taylor Creek and Operator Mt. One anomalously high reading was obtained from locality RJ46 within Jackson Flats opposite Currier Creek. The sulphur value for this coal was 4.87%, the next highest result being 0.51%.

## 5. Conclusions and Recommendations

The Mt. Jackson property contains a significant thickness of Jurassic/Cretaceous coal bearing strata, which at Mt. Jackson itself is at least 500 metres thick. Numerous coal seams occur within this succession, although many are thin (less than 1.0 metre) and may be repeated by faulting. The most structurally complex area appears to be in the northeast where thrusting and folding is more obvious. The Mt. Jackson and Falconer Creek areas, particularly above the tree line, seem to hold the most potential for coal development. This is however, in part, due to the lack of exposure on the lower slopes and valley bottoms.

The coal rank is entirely anthracitic with the occasional meta-anthracite being recorded. The highest rank coals occur in the Skeena Valley, to the southeast of the property and in the Pyramid Bluff, Grizzly Gulch and Taylor Creek areas.

Coal quality is generally good, although much work is still required in this area. The one anomalous sulphur content of 4.87% could be explained by a leaching out of sulphur compounds from associated marine strata, which then concentrated in the coal.

The 1983 field season must adopt a far more intensive exploration program for the Mt. Jackson property. The objective of this program should be to establish the most favourable area(s) within the property from both a coal reserve and mining aspect, thereby optimising Suncor's land position. The following recommendations are aimed at achieving this goal:

5.1 Trenching - This is probably the most important task to be undertaken in 1983. It is suggested that a mechanical excavator be used for this purpose as far superior and more rapid results will be obtained. A large area on the north slope of Mt. Jackson must be the initial target for the operation. The machine, once transported to the site will be able to move under its own power to almost all the localities where trenching is required. The trenches should penetrate solid bedrock, with depths unlikely to exceed 3.0 metres. A cage should be used by the logging personnel and under no circumstance is anyone to enter an unshuttered trench deeper than 1.5 metres.

The second area for trenching is the area to the south and west of Falconer Mountain. Again, once established, a mechanical excavator should be able to cover a reasonably large area under its own power. Priority in this area must be to uncover the Broon seam to establish its true thickness and extent.

Depending upon the type of machine used, it may be possible to gain access to some of the seams along the lower reaches of Jackson and Trail Creeks.

5.2 Drilling - Several areas present themselves as prime targets for drilling, however due to economic constraints, only the most important will be mentioned.

All the drill holes should be cored with a minimum diameter of 47.6 mm (NQ) and geophysically logged. The Mt. Jackson area requires a minimum of two holes drilled to a depth of approximately 300 metres. As the strata dips generally to the north and east at between 20° and 30°, the holes should be angled at 60° to the southwest. These holes should allow the examination of a good portion of the Mt. Jackson section with its numerous coals.

At least one hole should be drilled on the west side of Falconer Mountain to test for additional seams and down-dip extension of the Broon Seam. The hole(s) should be to the southwest of the Broon outcrop, angled at about 60° to the northeast and penetrate for at least 150 metres.

The remaining areas to be drilled in 1983 are on the lower slopes and valley bottom of the Skeena. One hole should be drilled between Trail and Jackson Creeks to examine the continuity of seams exposed in both creeks and to probe the lower part of the coal measures. The hole would be angled at 60° to the south and drilled to a depth of at least 150 metres.

Another drill hole should be located to the south of the Currier Creek-Skeena confluence in Jackson Flats. This hole will provide information in an area devoid of outcrop. It should be approximately 150 metres deep and either vertical or angled at about 60° to the southwest.

Very little data is available within the Skeena Valley north of the Currier Creek confluence. It is proposed therefore that two holes be drilled in this area, one just south of the Discovery Creek junction on the west bank and the other on the opposite bank to the north of Duke Creek. Both holes should be drilled to depths of between 150 and 200 metres with the former angled at 60° to the west and the latter vertical.

The map in Appendix IX shows the approximate locations for the above drill holes.

5.3 Geological Mapping - There is sufficient mapping work required on the property to keep two crews busy for the entire season. Mapping should be carried out at a 1:50,000 general scale and a 1:500 detailed scale for areas of particular interest. Geological sections must be measured, in particular the Mt. Jackson section. Correlation must be attempted between the strata in Currier, Trail and Jackson creeks as well as between Mt. Jackson and Falconer Mountain.

5.4 Air Photographs and Maps

The existing 1:10,000 map is an enlargement of the 1:50,000 N.T.S. Sheet and as such, is only a temporary measure. New maps should be prepared for the licence area at 1:10,000 scale with detailed maps of specific areas at 1:500 where possible. In association with this, the area shold be re-flown to obtain colour air photographs at a scale of approximately 1:15,000. This flying will have to be done when all snow has disappeared from the property which is likely to be in August and September.

5.5 Sampling and Testing

Samples obtained in 1983 will be from outcrop, trenches and drill core and should provide reliable results for analysis. Both proximate and ultimate analyses with calorific value and sulphur content should be carried out on selected samples. Additionally, washability tests may be undertaken on bulk samples obtained from trenches. Petrographic work should be confined to reflectance measurements and the use of palynology for correlative purposes should be examined.

5.6 Land Status - It is recommended that the following licences be dropped, 7365, 7368, 7375, 7376, 7377, 7378, 7379, 7380. Licences 7365 and 7368 are to the west of the Kluatantan and are difficult to access. They include steeply sloping ground on which no coal was found in 1982. The remaining licences cover the Grizzly Gulch-Taylor Creek area. Although several seams of coal were found in this area, none were exceptionally thick and most contained a high percentage of ash. The area is an elevated one and appears to be the most structurally complex within the original licences. Exploitation of the coals would therefore be difficult.

The 1982 field work has shown that additional coal licences need to be acquired to cover an area of 1552 hectares adjoining the southeastern portion of the property. Two of these new licences cover the eastern part of Mt. Jackson where coal has been found and also cover the strike extension of seams to the west. The remaining licences cover the upper section of Falconer Creek and west slopes of Falconer Mountain. This area contains several coals, one of which, the Broon Seam, is probably of substantial thickness.

5.7 Summary of Recommendations

a) Trenching - Priority areas are Mt. Jackson and Falconer Creek.

b) Drilling - 5 or 6 core holes to depths of 150 to 300 metres. Sites include Mt. Jackson, Falconer Creek and the Skeena Valley.

c) Geological Mapping - Property to be mapped at a 1:10,000 general scale and 1:500 for detailed areas. Sections require measuring.

d) Air Photographs and Maps - New maps at 1:10,000 and 1:500 scales required. Air photographs in colour at approximately 1:15,000.

e) Sampling and Testing - Outcrops, trenches and drill core to be sampled for proximate, ultimate, calorific value, sulphur content and petrographic analyses. Bulk samples should be obtained for washability tests.

f) Land Status - Drop licence numbers 7365, 7368,, 7376, 7377, 7378, 7379 and 7380. Acquire 1551 hectares adjoining the southeast of the property.

## Acknowledgements

The author would like to thank all the participants of the 1982 field exploration program at Mt. Jackson. Particular thanks are due to Rob Booker, party chief, for his hard work both in the field and office.

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# APPENDIX I

## TRAVERSE MAPS OF THE MT. JACKSON PROPERTY

# APPENDIX II

## GEOLOGICAL MAPS OF THE MT. JACKSON PROPERTY

# APPENDIX III

## MT. JACKSON STRATIGRAPHIC SECTION

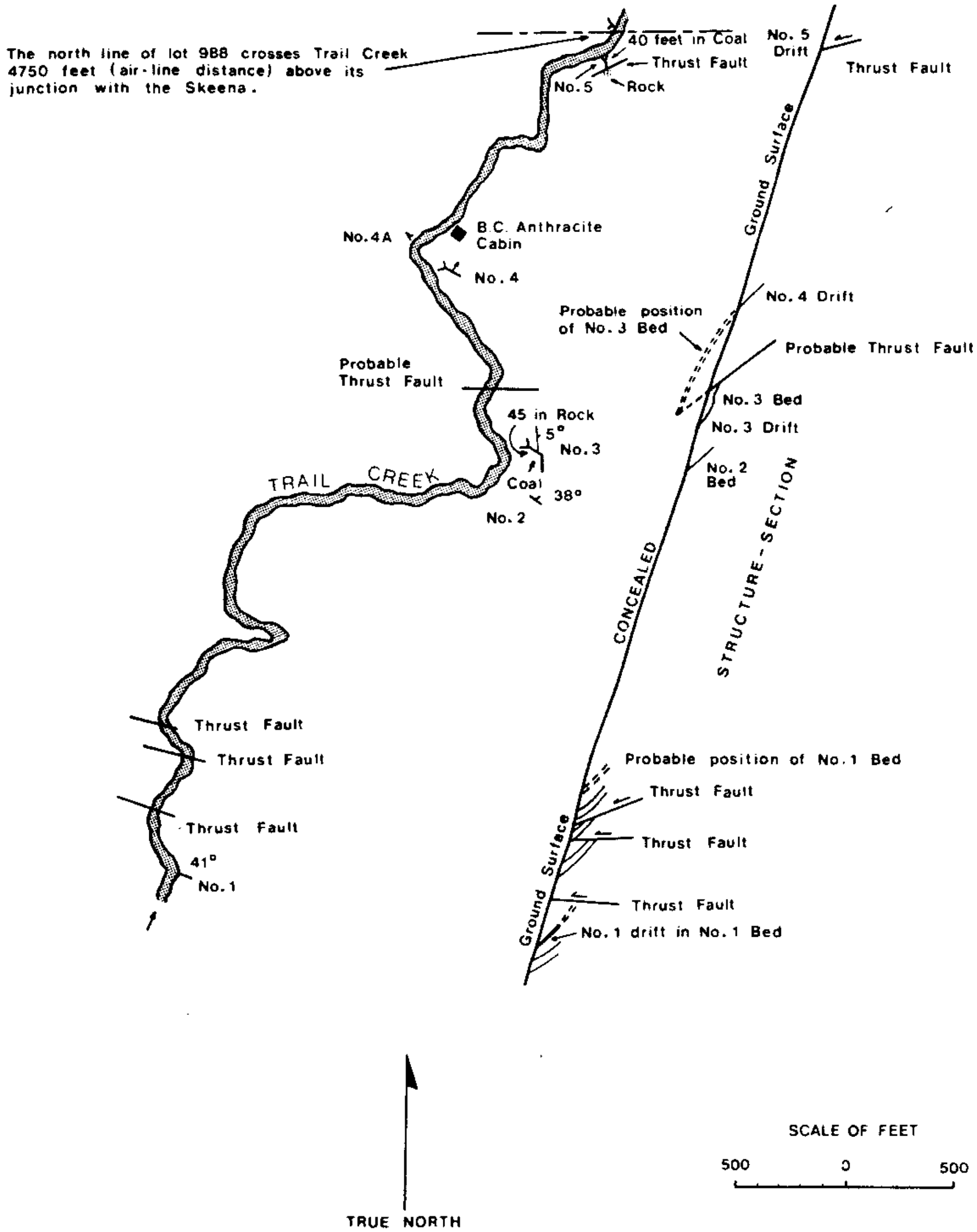
# MOUNT JACKSON SECTION

(After Malloch 1911, 1912)

| | Meters |
|---|---|
| Brown Shale | 17.07 |
| Blue shale | 3.05 |
| Yellow shale | 3.05 |
| Coal | 1.00 |
| Sandstone | 10.06 |
| Bituminous Shale | 0.30 |
| Black Shale | 5.18 |
| Sandstone with Chert Pebbles | 1.52 |
| Shale | 21.03 |
| Coal | 1.83 |
| Brown Shale | 26.82 |
| Bituminous Shale | 0.91 |
| Black Shale | 7.62 |
| Dirty Coal | 0.30 |
| Black/Brown Shale | 40.84 |
| Sandstone | 6.10 |
| Black Shale | 21.34 |
| Coal | 0.30 |
| Black Shale | 4.88 |
| Shaly Sandstone | 3.05 |
| Black Shales | 38.71 |
| Grey Sandstone | 14.30 |
| Black Shale | 12.50 |
| Coal | 0.55 |
| Black Shale | 18.90 |
| Coal | 0.95 |
| Black Shale | 0.91 |
| Yellow Shale | 15.24 |
| Coal | 1.28 |
| Black Shale | 4.88 |
| Grey Sandstone | 7.32 |

# APPENDIX IV

## SECTION AND SKETCH MAP OF LOWER TRAIL CREEK (1912)




Suncor inc. Resources Group — COAL AND MINERALS DEPARTMENT

# SECTION AND SKETCH MAP OF LOWER TRAIL CREEK

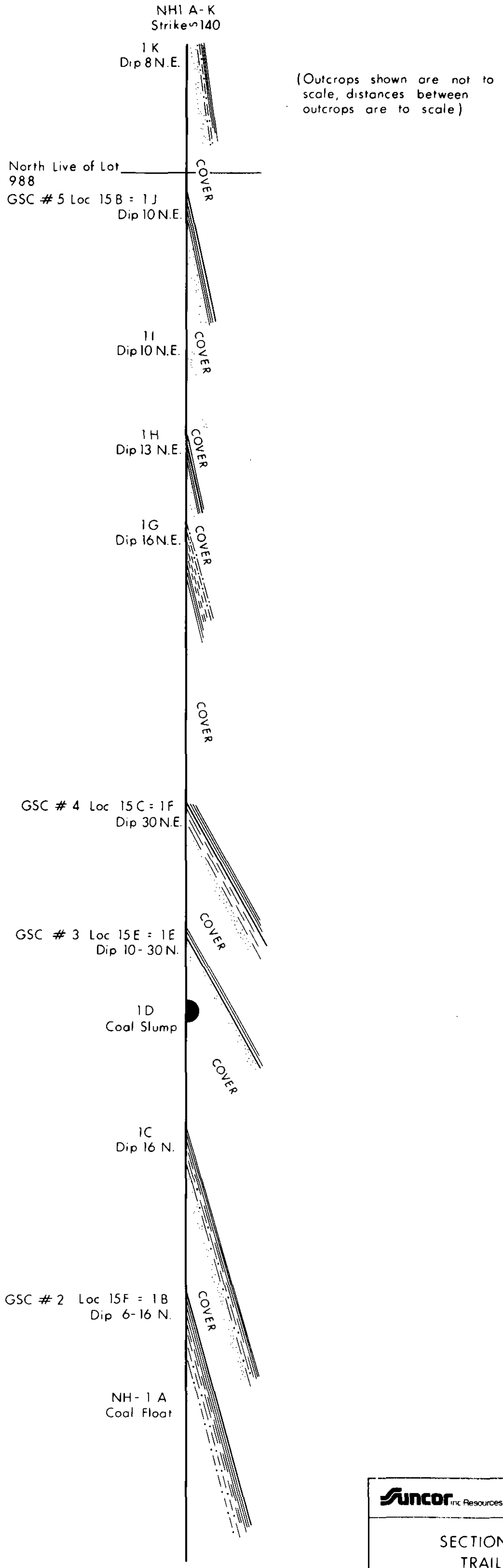
**(AFTER G.W. EVANS, 1912)**

| DATE | SCALE | N.T.S. | DRAWING No |
|---|---|---|---|
| | | | |

APPENDIX IV

# APPENDIX V

## SECTION ALONG TRAIL CREEK (1982)




Suncor Inc Resources Group — COAL AND MINERALS DEPARTMENT

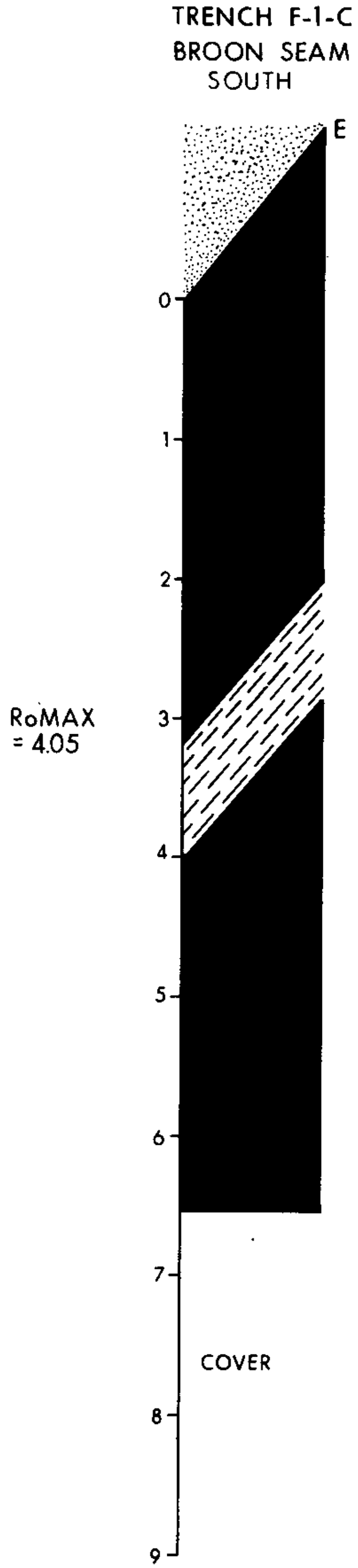
SECTION ALONG
TRAIL CREEK
(1982)

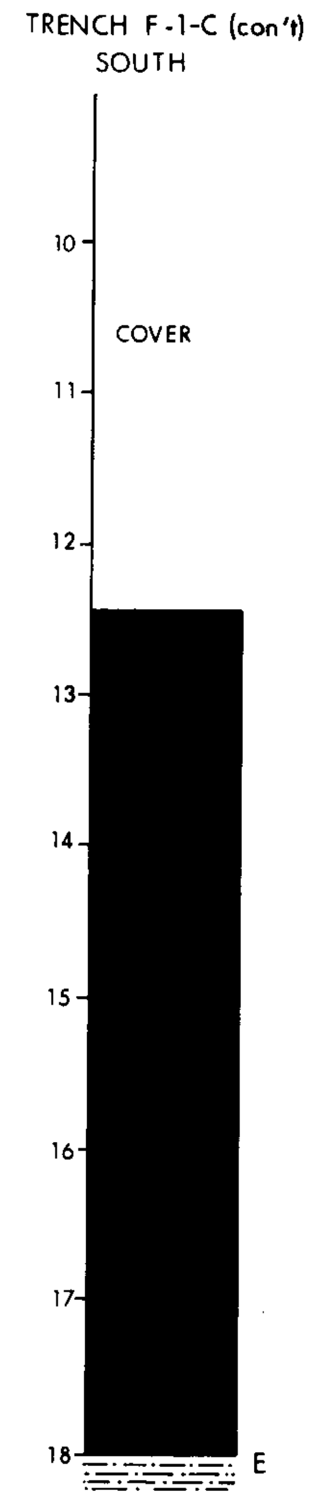
| DATE | SCALE | NTS | DRAWING No. |
|---|---|---|---|
| 83-01 | 1:2500 | | |

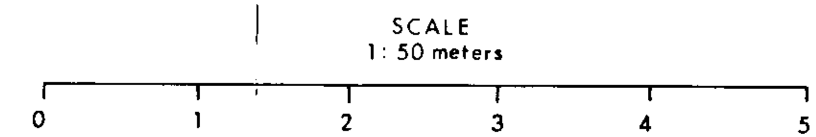
APPENDIX V

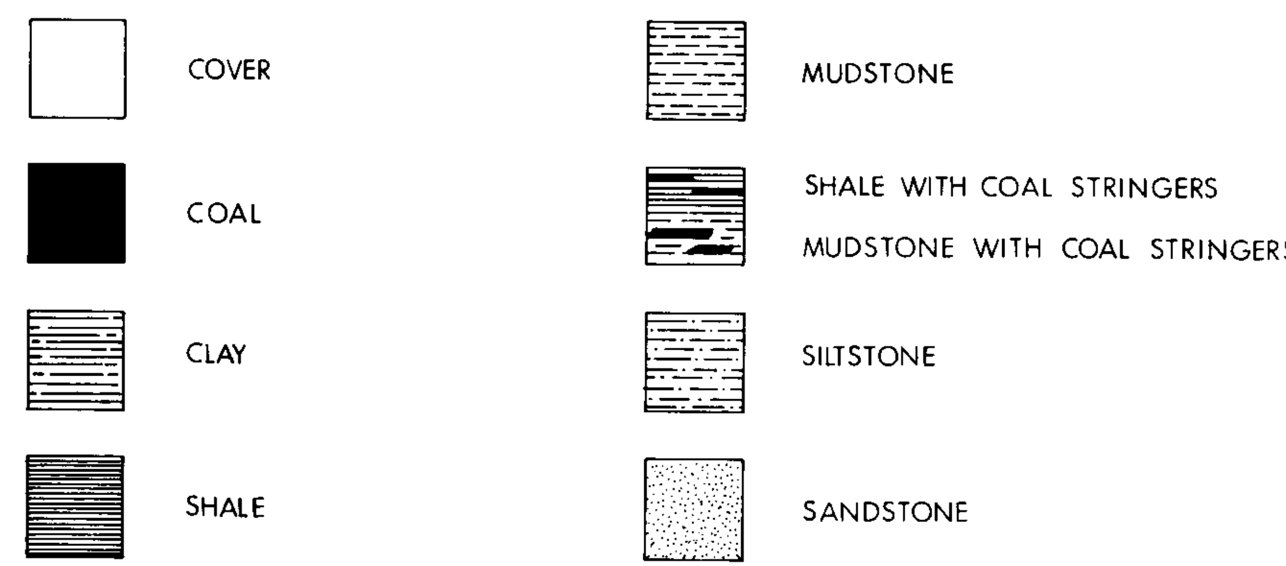
# APPENDIX VI

## TRENCH DESCRIPTIONS



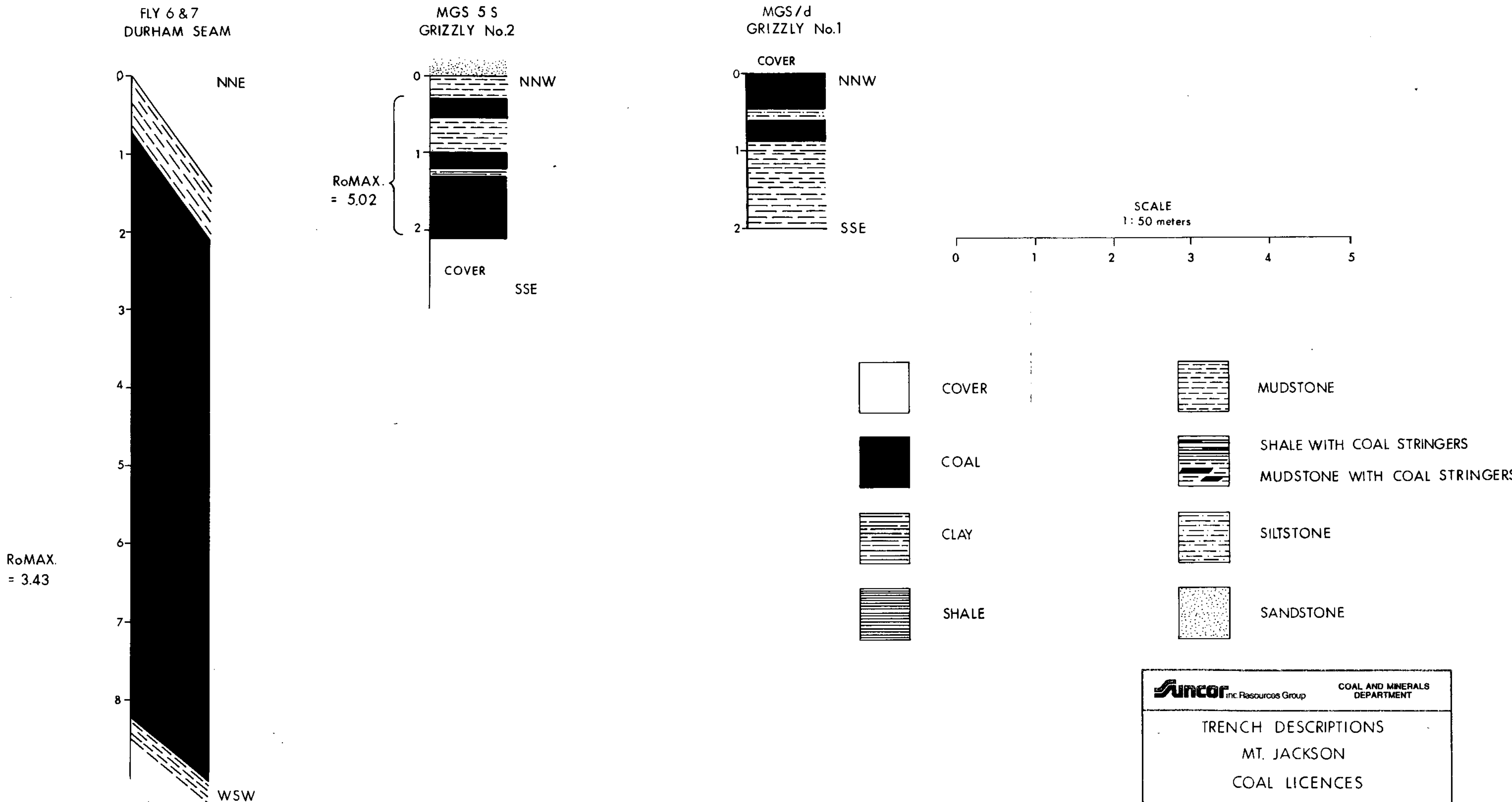




Suncor Inc. Resources Group — COAL AND MINERALS DEPARTMENT

TRENCH DESCRIPTIONS
MT. JACKSON
COAL LICENCES

| DATE | SCALE | N.T.S. | DRAWING No. |
|---|---|---|---|
| 83-01 | 1:50 | | |

APPENDIX VI




Suncor Inc. Resources Group — COAL AND MINERALS DEPARTMENT

TRENCH DESCRIPTIONS
MT. JACKSON
COAL LICENCES

| DATE | SCALE | N.T.S. | DRAWING No |
|---|---|---|---|
| 83-01 | 1:50 | | |

APPENDIX VI(a)

# APPENDIX VIII

## PROXIMATE ANALYSIS RESULTS

# LORING LABORATORIES LTD

## CERTIFICATE of COAL TESTING

SUNCOR INC.

ATTN: J. Davies

P.O. # 40-82-170

Page # 1

FILE NO.: 24017

DATE: October 20, 1982

| SAMPLE NO. | IDENTIFICATION | SAMPLE TYPE | % RECOVERY SINK | % RECOVERY FLOAT | | REC'D % $H_2O$ | % $H_2O$ | % VCL MATTER | % ASH | % FIXED CARBON | % S | BTU /LB | % RO | % M.M. db | % dmmf F.C. | RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M 1 | Mt. Jackson | Raw Coal | | | As Received | 14.77 | ---- | 9.53 | 15.71 | 59.99 | .31 | 9556 | | | | |
| | | | | | Air Dried | ----- | 2.59 | 10.89 | 17.95 | 68.57 | .35 | 10922 | | | | |
| | | | | | Dry Basis | ----- | ---- | 11.18 | 18.43 | 70.39 | .36 | 11212 | 4.62 | 20 | 88 | A |
| M 2 | Mt. Jackson | Raw Coal | | | As Received | 8.38 | ---- | 8.92 | 39.36 | 43.34 | .26 | 6749 | | | | |
| | | | | | Air Dried | ----- | 2.59 | 9.48 | 41.85 | 46.08 | .28 | 7176 | | | | |
| | | | | | Dry Basis | ----- | ---- | 9.71 | 42.96 | 47.33 | .29 | 7367 | 3.81 | 47 | 89 | A |
| M 4 | Mt. Jackson | Raw Coal | | | As Received | 15.05 | ---- | 11.41 | 28.99 | 44.55 | .40 | 6997 | | | | |
| | | | | | Air Dried | ----- | 3.48 | 12.96 | 32.94 | 50.62 | .46 | 7950 | | | | |
| | | | | | Dry Basis | ----- | ---- | 13.43 | 34.13 | 52.44 | .48 | 8237 | 3.43 | 37 | 83 | A |
| M 5 | Mt. Jackson | Raw Coal | | | As Received | 4.58 | ---- | 7.42 | 23.14 | 64.86 | .41 | 10112 | | | | |
| | | | | | Air Dried | ----- | 2.18 | 7.61 | 23.72 | 66.49 | .42 | 10366 | | | | |
| | | | | | Dry Basis | ----- | ---- | 7.78 | 24.25 | 67.97 | .43 | 10597 | 4.18 | 26 | 92 | A |
| M 6 | Trail Creek | Raw Coal | | | As Received | 2.67 | ---- | 4.50 | 27.21 | 65.62 | .45 | 9804 | | | | |
| | | | | | Air Dried | ----- | 1.20 | 4.57 | 27.62 | 66.61 | .46 | 9952 | | | | |
| | | | | | Dry Basis | ----- | ---- | 4.63 | 27.96 | 67.41 | .47 | 10073 | 4.80 | 30 | 96 | A |
| M 7 | Trail Creek | Raw Coal | | | As Received | 3.18 | ---- | 8.18 | 40.54 | 48.10 | .54 | 7454 | | | | |
| | | | | | Air Dried | ----- | .90 | 8.37 | 41.49 | 49.24 | .55 | 7630 | | | | |
| | | | | | Dry Basis | ----- | ---- | 8.45 | 41.87 | 49.68 | .55 | 7699 | 4.17 | 46 | 92 | A |
| M 8 | Jackson Creek | Raw Coal | | | As Received | 11.73 | ---- | 6.58 | 57.21 | 24.48 | .31 | 3615 | | | | |
| | | | | | Air Dried | ----- | 2.00 | 7.31 | 63.52 | 27.17 | .34 | 4013 | | | | |
| | | | | | Dry Basis | ----- | ---- | 7.46 | 64.82 | 27.72 | .35 | 4095 | 4.19 | 70 | 92 | A |

SUNCOR INC.

ATTN: J. Davies

# LORING LABORATORIES LTD

P.O. # 40-82-170

## CERTIFICATE of COAL TESTING

Page # 2

FILE NO.: 24017

DATE: October 20, 1982

| SAMPLE NO. | IDENTIFICATION | SAMPLE TYPE | % RECOVERY SINK | % RECOVERY FLOAT | | REC'D % $H_2O$ | % $H_2O$ | % VCL MATTER | % ASH | % FIXED CARBON | % S | BTU /LB | % RO | % M.M. db | % dmmf F.C. | RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M 9 | Jackson Creek | Raw Coal | | | As Received | 16.83 | ---- | 11.05 | 22.72 | 49.40 | .26 | 7890 | 4.58 | 30 | 85 | A |
| | | | | | Air Dried | ----- | 4.03 | 12.75 | 26.22 | 57.00 | .30 | 9104 | | | | |
| | | | | | Dry Basis | ----- | ---- | 13.29 | 27.32 | 59.39 | .31 | 9486 | | | | |
| M 10 | Jackson Creek | Raw Coal | | | As Received | 22.32 | ---- | 14.99 | 21.99 | 40.70 | .21 | 6799 | 4.69 | 31 | 76 | A |
| | | | | | Air Dried | ----- | 4.13 | 18.50 | 27.14 | 50.23 | .26 | 8391 | | | | |
| | | | | | Dry Basis | ----- | ---- | 19.30 | 28.31 | 52.39 | .27 | 8752 | | | | |
| M 11 | Currier Creek | Raw Coal | | | As Received | 3.96 | ---- | 3.51 | 48.37 | 44.16 | .46 | 6139 | 4.43 | 55 | 102 | A |
| | | | | | Air Dried | ----- | 1.06 | 3.62 | 49.83 | 45.49 | .47 | 6324 | | | | |
| | | | | | Dry Basis | ----- | ---- | 3.66 | 50.36 | 45.98 | .48 | 6392 | | | | |
| M 14 | Jackson/McEvoy Flats | Raw Coal | | | As Received | 5.06 | ---- | 10.45 | 36.86 | 47.63 | .29 | 7563 | 5.16 | 42 | 87 | A |
| | | | | | Air Dried | ----- | 2.38 | 10.75 | 37.90 | 48.97 | .30 | 7777 | | | | |
| | | | | | Dry Basis | ----- | ---- | 11.01 | 38.82 | 50.17 | .31 | 7966 | | | | |
| M 15 | Jackson/McEvoy Flats | Raw Coal | | | As Received | 5.33 | ---- | 5.31 | 45.70 | 43.66 | 4.61 | 6308 | 4.57 | 55 | 103 | A |
| | | | | | Air Dried | ----- | 1.30 | 5.54 | 47.65 | 45.51 | 4.81 | 6577 | | | | |
| | | | | | Dry Basis | ----- | ---- | 5.61 | 48.28 | 46.11 | 4.87 | 6664 | | | | |
| M 16 | Jackson Creek | Raw Coal | | | As Received | 6.10 | ---- | 3.01 | 7.14 | 83.75 | .44 | 13051 | 4.39 | 9 | 98 | A |
| | | | | | Air Dried | ----- | 1.04 | 3.17 | 7.53 | 88.26 | .46 | 13754 | | | | |
| | | | | | Dry Basis | ----- | ---- | 3.20 | 7.61 | 89.19 | .46 | 13898 | | | | |
| M 17 | Jackson Creek | Raw Coal | | | As Received | 15.06 | ---- | 6.23 | 12.71 | 66.00 | .33 | 10243 | 4.60 | 16 | 93 | A |
| | | | | | Air Dried | ----- | 2.25 | 7.17 | 14.63 | 75.95 | .38 | 11788 | | | | |
| | | | | | Dry Basis | ----- | ---- | 7.34 | 14.97 | 77.69 | .39 | 12059 | | | | |

SUNCOR INC.

ATTN: J. Davies

# LORING LABORATORIES LTD

P.O. # 40-82-170

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## CERTIFICATE of COAL TESTING

FILE NO.: 24017

DATE: October 20, 1982

| SAMPLE NO. | IDENTIFICATION | SAMPLE TYPE | % RECOVERY SINK | % RECOVERY FLOAT | | REC'D % $H_2O$ | % $H_2O$ | % VOL MATTER | % ASH | % FIXED CARBON | % S | BTU /LB. | % RO | % M.M. d.b. | % dmmf F.C. | RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M 18 | Mt. Jackson | Raw Coal | | | As Received | 6.40 | ---- | 5.99 | 24.39 | 63.22 | .48 | 9760 | | | | |
| | | | | | Air Dried | ----- | 1.88 | 6.28 | 25.57 | 66.27 | .50 | 10231 | | | | |
| | | | | | Dry Basis | ----- | ---- | 6.40 | 26.06 | 67.54 | .51 | 10427 | 3.56 | 28 | 94 | A |
| M 20 | Mt. Jackson | Raw Coal | | | As Received | 3.29 | ---- | 3.45 | 81.35 | 11.91 | .08 | 1391 | | | | |
| | | | | | Air Dried | ----- | .92 | 3.53 | 83.34 | 12.21 | .08 | 1425 | | | | |
| | | | | | Dry Basis | ----- | ---- | 3.56 | 84.11 | 12.33 | .08 | 1438 | 3.83 | 91 | 137 | A |
| M 23 | Mt. Jackson | Raw Coal | | | As Received | 5.35 | ---- | 7.49 | 16.86 | 70.30 | .48 | 11075 | | | | |
| | | | | | Air Dried | ----- | 2.37 | 7.73 | 17.39 | 72.51 | .49 | 11424 | | | | |
| | | | | | Dry Basis | ----- | ---- | 7.92 | 17.81 | 74.27 | .50 | 11701 | 4.45 | 20 | 93 | A |
| M 24 | Mt. Jackson | Raw Coal | | | As Received | 7.58 | ---- | 6.23 | 23.23 | 62.96 | .31 | 9707 | | | | |
| | | | | | Air Dried | ----- | 2.25 | 6.59 | 24.57 | 66.59 | .33 | 10267 | | | | |
| | | | | | Dry Basis | ----- | ---- | 6.74 | 25.14 | 68.12 | .34 | 10503 | 4.85 | 27 | 93 | A |
| M 25 | Mt. Jackson | Raw Coal | | | As Received | 14.25 | ---- | 6.59 | 59.34 | 19.82 | .39 | 2755 | | | | |
| | | | | | Air Dried | ----- | 2.42 | 7.50 | 67.53 | 22.55 | .44 | 3135 | | | | |
| | | | | | Dry Basis | ----- | ---- | 7.69 | 69.20 | 23.11 | .45 | 3213 | 4.05 | 75 | 92 | A |
| M 26 | Mt. Jackson | Raw Coal | | | As Received | 10.61 | ---- | 4.72 | 23.95 | 60.72 | .42 | 9181 | | | | |
| | | | | | Air Dried | ----- | 1.78 | 5.19 | 26.32 | 66.71 | .46 | 10088 | | | | |
| | | | | | Dry Basis | ----- | ---- | 5.28 | 26.80 | 67.92 | .47 | 10270 | 4.33 | 29 | 96 | A |
| M 28 | Grizzly Mt. | Raw Coal | | | As Received | 16.95 | ---- | 9.35 | 21.90 | 51.80 | .36 | 7941 | | | | |
| | | | | | Air Dried | ----- | 3.15 | 10.90 | 25.54 | 60.41 | .42 | 9260 | | | | |
| | | | | | Dry Basis | ----- | ---- | 11.25 | 26.37 | 62.38 | .43 | 9561 | 5.03 | 29 | 88 | A |

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# LORING LABORATORIES LTD

P.O. # 40-82-170

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## CERTIFICATE of COAL TESTING

FILE NO. 24017

DATE: October 20, 1982

| SAMPLE NO. | IDENTIFICATION | SAMPLE TYPE | % RECOVERY SINK | % RECOVERY FLOAT | | REC'D % $H_2O$ | % $H_2O$ | % VCL MATTER | % ASH | % FIXED CARBON | % S | BTU /LB. | % RO | % M.M. db | % dmmf F.C. | RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M 29 | Grizzly Gulch | Raw Coal | | | As Received | 4.44 | ---- | 4.61 | 31.94 | 59.01 | .31 | 8489 | | | | |
| | | | | | Air Dried | ----- | 1.97 | 4.73 | 32.77 | 60.53 | .32 | 8708 | | | | |
| | | | | | Dry Basis | ----- | ---- | 4.83 | 33.43 | 61.74 | .33 | 8883 | 5.17 | 36 | 97 | A |
| M 32 | Skeena River | Raw Coal | | | As Received | 3.09 | ---- | 18.65 | 31.81 | 46.45 | .47 | 9121 | | | | |
| | | | | | Air Dried | ----- | 1.58 | 18.94 | 32.31 | 47.17 | .48 | 9263 | | | | |
| | | | | | Dry Basis | ----- | ---- | 19.24 | 32.83 | 47.93 | .49 | 9412 | 1.11 | 36 | 75 | H.V.A |
| M 33 | Skeena River | Raw Coal | | | As Received | 2.96 | ---- | 19.60 | 26.24 | 51.20 | .49 | 10093 | | | | |
| | | | | | Air Dried | ----- | 1.40 | 19.92 | 26.66 | 52.02 | .50 | 10255 | | | | |
| | | | | | Dry Basis | ----- | ---- | 20.20 | 27.04 | 52.76 | .51 | 10401 | 1.12 | 30 | 75 | H.V.A |
| M 34 | Falconer Creek | Raw Coal | | | As Received | 10.19 | ---- | 4.90 | 34.77 | 50.14 | .28 | 7252 | | | | |
| | | | | | Air Dried | ----- | 1.83 | 5.36 | 38.01 | 54.80 | .31 | 7927 | | | | |
| | | | | | Dry Basis | ----- | ---- | 5.46 | 38.72 | 55.82 | .32 | 8075 | 5.44 | 42 | 96 | A |
| M 35 | Falconer Creek | Raw Coal | | | As Received | 21.44 | ---- | 18.33 | 12.51 | 47.72 | .24 | 7810 | | | | |
| | | | | | Air Dried | ----- | 4.77 | 22.22 | 15.16 | 57.85 | .29 | 9467 | | | | |
| | | | | | Dry Basis | ----- | ---- | 23.33 | 15.92 | 60.75 | .30 | 9942 | 4.02 | 17 | 73 | A |
| M 36 | Falconer Creek | Raw Coal | | | As Received | 14.13 | ---- | 10.52 | 18.24 | 57.11 | .30 | 9161 | | | | |
| | | | | | Air Dried | ----- | 2.61 | 11.93 | 20.69 | 64.77 | .34 | 10390 | | | | |
| | | | | | Dry Basis | ----- | ---- | 12.25 | 21.24 | 66.51 | .35 | 10668 | 4.05 | 23 | 86 | A |
| M 38 | Jackson/McEvoy Flats | Raw Coal | | | As Received | 3.28 | ---- | 3.58 | 26.43 | 66.71 | .41 | 10279 | | | | |
| | | | | | Air Dried | ----- | .85 | 3.67 | 27.09 | 68.39 | .42 | 10537 | | | | |
| | | | | | Dry Basis | ----- | ---- | 3.70 | 27.32 | 68.98 | .42 | 10628 | 4.84 | 30 | 99 | A |

SUNCOR INC.

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# LORING LABORATORIES LTD

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## CERTIFICATE of COAL TESTING

FILE NO. 24017

DATE: October 20, 1982

| SAMPLE NO. | IDENTIFICATION | SAMPLE TYPE | % RECOVERY SINK | % RECOVERY FLOAT | | REC'D % $H_2O$ | % $H_2O$ | % VOL MATTER | % ASH | % FIXED CARBON | % S | BTU /LB. | % RO | % M.M. db | % dmmf F.C. | RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M 39 | Jarrow Ridge | Raw Coal | | | As Received | 5.31 | ---- | 8.34 | 18.82 | 67.53 | .34 | 10543 | | | | |
| | | | | | Air Dried | ----- | 2.45 | 8.59 | 19.39 | 69.57 | .35 | 10861 | | | | |
| | | | | | Dry Basis | ----- | ---- | 8.81 | 19.88 | 71.31 | .36 | 11134 | 4.28 | 22 | 91 | A |
| M 42 | Operator Mt. | Raw Coal | | | As Received | 11.58 | ---- | 10.52 | 38.13 | 39.77 | .24 | 6303 | | | | |
| | | | | | Air Dried | ----- | 2.39 | 11.61 | 42.09 | 43.91 | .26 | 6958 | | | | |
| | | | | | Dry Basis | ----- | ---- | 11.89 | 43.12 | 44.99 | .27 | 7128 | 5.39 | 47 | 85 | A |
| M 43 | Operator Mt. | Raw Coal | | | As Received | 5.49 | ---- | 6.52 | 53.25 | 34.74 | .25 | 4546 | | | | |
| | | | | | Air Dried | ----- | 2.09 | 6.75 | 55.17 | 35.99 | .26 | 4710 | | | | |
| | | | | | Dry Basis | ----- | ---- | 6.89 | 56.35 | 36.76 | .27 | 4810 | 5.38 | 61 | 94 | A |
| M 44 | Pyramid Bluff | Raw Coal | | | As Received | 5.60 | ---- | 4.44 | 40.08 | 49.88 | .35 | 6846 | | | | |
| | | | | | Air Dried | ----- | 1.62 | 4.63 | 41.77 | 51.98 | .36 | 7135 | | | | |
| | | | | | Dry Basis | ----- | ---- | 4.71 | 42.46 | 52.83 | .37 | 7253 | 5.22 | 46 | 98 | A |
| M 45 | Taylor Creek | Raw Coal | | | As Received | 4.68 | ---- | 3.17 | 45.71 | 46.44 | .24 | 5908 | | | | |
| | | | | | Air Dried | ----- | 1.40 | 3.28 | 47.28 | 48.04 | .25 | 6111 | | | | |
| | | | | | Dry Basis | ----- | ---- | 3.33 | 47.95 | 48.72 | .25 | 6198 | 5.48 | 52 | 102 | A |
| M 46 | Taylor Creek | Raw Coal | | | As Received | 18.74 | ---- | 7.02 | 34.81 | 39.43 | .28 | 5989 | | | | |
| | | | | | Air Dried | ----- | 2.76 | 8.40 | 41.66 | 47.18 | .34 | 7167 | | | | |
| | | | | | Dry Basis | ----- | ---- | 8.64 | 42.84 | 48.52 | .35 | 7370 | 5.37 | 46 | 90 | A |
| M 47 | Grizzly Gulch | Raw Coal | | | As Received | 8.88 | ---- | 4.86 | 45.87 | 40.39 | .21 | 5639 | | | | |
| | | | | | Air Dried | ----- | 2.04 | 5.22 | 49.31 | 43.43 | .23 | 6062 | | | | |
| | | | | | Dry Basis | ----- | ---- | 5.33 | 50.34 | 44.33 | .23 | 6188 | 5.38 | 55 | 99 | A |

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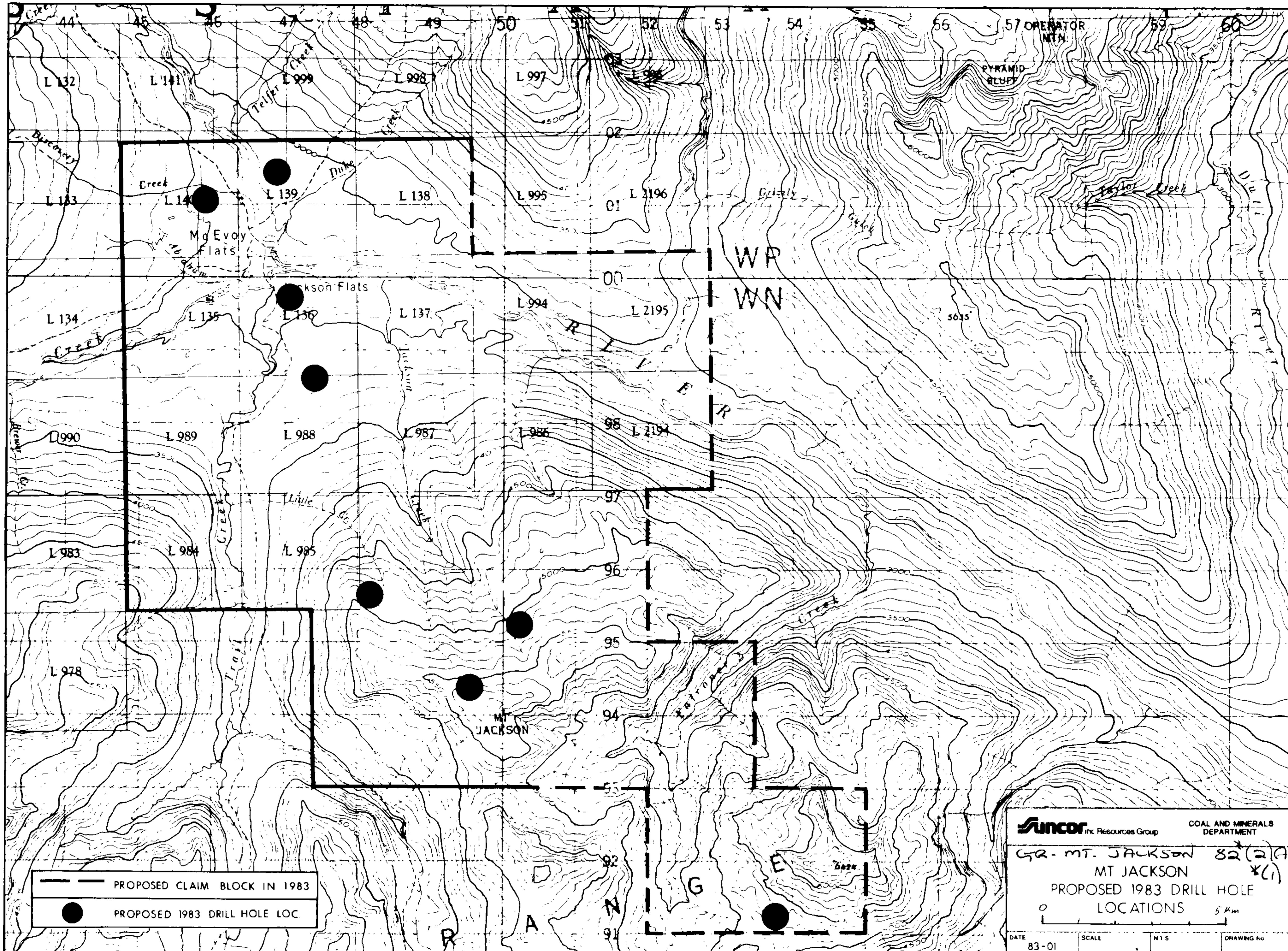
## CERTIFICATE of COAL TESTING

FILE NO.: 24017

DATE: October 20, 1982

| SAMPLE NO. | IDENTIFICATION | SAMPLE TYPE | % RECOVERY SINK | % RECOVERY FLOAT | | REC'D % $H_2O$ | % $H_2O$ | % VCL MATTER | % ASH | % FIXED CARBON | % S | BTU /LB. | % RO | % M.M. db | % dmmf F.C. | RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M 48 | Grizzly Gulch | Raw Coal | | | As Received | 17.30 | ---- | 4.63 | 37.38 | 40.69 | .23 | 5936 | | | | |
| | | | | | Air Dried | ----- | 2.01 | 5.49 | 44.29 | 48.21 | .27 | 7034 | | | | |
| | | | | | Dry Basis | ----- | ---- | 5.60 | 45.20 | 49.20 | .28 | 7179 | 5.36 | 49 | 97 | A |
| M 49 | Jackson Creek | Raw Coal | | | As Received | 29.22 | ---- | 13.41 | 33.52 | 23.85 | .15 | 3893 | | | | |
| | | | | | Air Dried | ----- | 5.45 | 17.91 | 44.78 | 31.86 | .20 | 5200 | | | | |
| | | | | | Dry Basis | ----- | ---- | 18.94 | 47.36 | 33.70 | .21 | 5500 | --- | 51 | 69 | A |



PROPOSED CLAIM BLOCK IN 1983
PROPOSED 1983 DRILL HOLE LOC.
Suncor inc Resources Group
COAL AND MINERALS DEPARTMENT
GR - MT. JACKSON 82(2)A
MT JACKSON
PROPOSED 1983 DRILL HOLE LOCATIONS
DATE 83-01
SCALE
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McEvoy Flats
Jackson Flats
MT JACKSON
OPERATOR MTN
PYRAMID BLUFF
WP
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RIVER
RANGE




APPENDIX IX


PYRAMID BLUFF
GRIZZLY MT.
NORTH TAYLOR CREEK
NORTH TAYLOR FAULT
SOUTH TAYLOR FAULT
GRIZZLY GULCH
GRIZZLY ANTICLINE
GRIZZLY RIDGE
TAYLOR CREEK
SOUTH TAYLOR CREEK
SKEENA FAULT
FALCONER FAULT
FALCONER CREEK
NOTMY FAULT
SKEENA RIVER
FALCONER MTN.
THOMPSON CREEK
THOMPSON FAULT
TRUE
LEGEND
QUATERNARY
GLACIAL TILL, ALLUVIUM
JURASSIC/CRETACEOUS
COAL-BEARING
NON COAL-BEARING
MGS-1A TRAVERSE NAME AND STATION NUMBER
TRAVERSE ROUTE
SYMBOL
STRIKE AND DIP OF STR
SYNCLINE A
ANTICLINE A
FAULT
FAULT WITH MOVEMENT
UNIT BOUND
BOUNDARY SUNCOR LIC
LITHOLOGIC ABBREVIATIONS
SPOT LOCATION OF SAMPLE
C COAL
CB 100 m COAL AND COAL BLOOM FOR 100 m
C FL COAL FLOAT
CARB CARBONACEOUS MATERIAL
CARB SH W C STR CARBONACEOUS SHALE WITH COAL STRINGERS
SH SHALE
SST
SLST
MDST
SLT
MICA SLT
CONG
FOS
Suncor
GEOLO
DATE
DEC.1982


PYRAMID BLUFF
GRIZZLY MT.
NORTH TAYLOR CREEK
NORTH TAYLOR FAULT
SOUTH TAYLOR FAULT
TAYLOR CREEK
SOUTH TAYLOR CREEK
GRIZZLY ANTICLINE
GRIZZLY RIDGE
DUTI RIVER
SKEENA FAULT
SKEENA RIVER
THOMPSON CREEK
LEGEND
QUATERNARY
GLACIAL TILL, ALLUVIUM
JURASSIC/CRETACEOUS
COAL-BEARING
NON COAL-BEARING
MGS-1A TRAVERSE NAME AND STATION NUMBER
TRAVERSE ROUTE
SYMBOLS
STRIKE AND ANGLE OF DIP OF STRATA
SYNCLINE AND TREND
ANTICLINE AND TREND
FAULT
FAULT WITH DIRECTION OF MOVEMENT UP/DOWN
UNIT BOUNDARY
BOUNDARY OF SUNCOR LICENCES
LITHOLOGIC ABBREVIATIONS
● SPOT LOCATION OF SAMPLE
C COAL
CB 100m COAL AND COAL BLOOM FOR 100 m
C FL COAL FLOAT
CARB CARBONACEOUS MATERIAL
CARB SH W C STR CARBONACEOUS SHALE WITH COAL STRINGERS
SH SHALE
SST SANDSTONE
SLST SILTSTONE
MDST MUDSTONE
SLT SLATE
MICA SLT MICACEOUS SLATE
CONG CONGLOMERATE
FOS FOSSIL
Suncor inc. Resources Group
COAL AND MINERALS DEPARTMENT
MT. JACKSON
GEOLOGICAL / TRAVERSE MAP
EAST HALF
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DATE DEC.1982
SCALE 1:10,000
N.T.S.
DRAWING No. 82-276
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IRON MAI

M026


SKEENA SYNCLINE
TELFER CREEK
DUKE CREEK
SKEENA RIVER
MC EVOY FLATS
CREEK
JACKSON FLATS
SKEENA FAULT
DEFORMATION FAULT
DEFORMATION PEAK
JACKSON CREEK
LITTLE CREEK
CREEK
TRAIL
BEIRNES SYNCLINE
MT. JACKSON
DAVIES CREEK
CREEK
FALCONER
FALCONER FAULT
BOLDON RIDGE
JARROW RIDGE
TRUE
Suncor Inc. Resources Group
COAL AND MINERALS DEPARTMENT
MT. JACKSON
MT. JACKSON GEOLOGICAL AND TRAVERSE MAP
WEST HALF
DATE DEC. 1982
SCALE 1:10,000
N.T.S.
DRAWING No. 82-277

107

CONFIDENTIAL

APPENDIX VII

REFLECTANCE RESULTS

00107 (2)

## MT. JACKSON COAL PROPERTY

## REFLECTANCE RESULTS

| SAMPLE NO. | LOCALITY | REFLECTANCE (Ro max. %) | RANK |
|---|---|---|---|
| M1 | Mt. Jackson R.S. 1c | 4.62 | Anthracite |
| M2 | Mt. Jackson R.S. 2A | 3.81 | Anthracite |
| M3 | Mt. Jackson R.S. 2a | 3.90 | Anthracite |
| M4 | Mt. Jackson R.S. 4B | 3.43 | Anthracite |
| M5 | Mt. Jackson R.S. 3F | 4.18 | Anthracite |
| M6 | Trail Creek NH-1E | 4.80 | Anthracite |
| M7 | Trail Creek NH-2Nb | 4.17 | Anthracite |
| M8 | Jackson Creek NH-2H | 4.39 | Anthracite |
| M9 | Jackson Creek NH-2E | 4.58 | Anthracite |
| M10 | Jackson Creek NH-2F | 4.69 | Anthracite |
| M11 | Currier Creek NH-3C | 4.43 | Anthracite |
| M12 | Davies Creek RS-5D | 3.85 | Anthracite |
| M13 | Davies Creek R-5a | 3.65 | Anthracite |
| M14 | Jackson Flats RJ-4E | 5.16 | Anthracite |
| M15 | Jackson Flats RJ-4c | 4.57 | Anthracite |
| M16 | Jackson Creek RS-2B | 4.39 | Anthracite |
| M17 | Jackson Creek RS-2D | 4.60 | Anthracite |
| M18 | Mt. Jackson RS-2L | 3.56 | Anthracite |
| M19 | Mt. Jackson RS-4D | 3.56 | Anthracite |
| M20 | Davies Creek Norm-1E | 3.83 | Anthracite |

## MT. JACKSON COAL PROPERTY

## REFLECTANCE RESULTS

| SAMPLE NO. | LOCALITY | REFLECTANCE (Ro max. %) | RANK |
|---|---|---|---|
| M21 | Davies Creek Norm-3c | 1.91 | Semi-Anthracite |
| M22 | Mt. Jackson Norm-4B | 4.05 | Anthracite |
| M23 | Mt. Jackson Norm-4E | 4.45 | Anthracite |
| M24 | Mt. Jackson Norm-4H | 4.85 | Anthracite |
| M25 | Little Creek Norm-5c | 4.05 | Anthracite |
| M26 | Little Creek Norm-5E | 4.35 | Anthracite |
| M27 | Little Creek Norm-5F | 4.37 | Anthracite |
| M28 | Grizzly Mt. MGS-4E | 5.03 | Anthracite |
| M29 | Grizzly Gulch MGS-5c | 5.17 | Anthracite |
| M30 | Grizzly Gulch MGS-5S | 5.02 | Anthracite |
| M31 | Taylor Creek MGS-6F | 5.68 | Anthracite |
| M32 | Skeena R. RAB-2JC | 1.11 | High/Medium Volatile Bituminous |
| M33 | Skeena R. RAB-2JH | 1.12 | High/Medium Volatile Bituminous |
| M34 | Falconer Creek JAF-1A | 5.44 | Anthracite |
| M35 | Falconer Creek JAF-A | 4.02 | Anthracite |
| M36 | Falconer Creek F-1ca | 4.05 | Anthracite |
| M37 | Falconer Creek F-1Da | 3.94 | Anthracite |
| M38 | Jackson Flats RJ-1E | 4.84 | Anthracite |
| M39 | Jarrow Ridge JA-6Fb | 4.28 | Anthracite |

## MT. JACKSON COAL PROPERTY

## REFLECTANCE RESULTS

| SAMPLE NO. | LOCALITY | REFLECTANCE (Ro max. %) | RANK |
|---|---|---|---|
| M40 | Operator Mt. MGS-3D | 5.37 | Anthracite |
| M41 | Operator Mt. MGS-3a | 5.95 | Meta-anthracite |
| M42 | Pyramid Bluff MGS-3M | 5.39 | Anthracite |
| M43 | Pyramid Bluff MGS-3O | 5.38 | Anthracite |
| M44 | Pyramid Bluff MGS-3Q | 5.22 | Anthracite |
| M45 | Taylor Creek MGS-2I | 5.48 | Anthracite |
| M46 | Taylor Creek MGS-2Q | 5.37 | Anthracite |
| M47 | Grizzly Gulch MGS-1E | 5.38 | Anthracite |
| M48 | Grizzly Gulch MGS-1I | 5.36 | Anthracite |