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# COAL MINE LAKE, N.W.T.

## 1982 COAL PROJECT

## COAL EXPLORATION LICENCE 156

## PETRO-CANADA COAL DIVISION

## VOLUME I

This report has been examined; declared acceptable as Representation Work under Section 32 and Schedule B of the Canada Mining Regulations and valued in the amount of $ 186,073.47

for Chief, T.K. Laine

Date: August 3, 1983.

PETRO-CANADA

COAL DIVISION

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NTS 117A/9E

COAL EXPLORATION LICENCE 156

Submitted June 30, 1983

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Senior Geologist



The Coal Mine Lake property. This view, looking southwest from the Mackenzie Delta, shows the western part of the property near the mouth of the Big Fish River (left). The tundra plateau (middle ground) is underlain by coal bearing strata of the Reindeer Formation. A prominent scarp defines the delta margin at the northern edge of the plateau

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# SUMMARY

The Coal Mine Lake property, located on the western margin of the Mackenzie Delta, was acquired in 1981 by Petro-Canada Exploration Inc. The 1982 exploration program has demonstrated a low strip ratio resource potential of more than 500 million tonnes of high volatile bituminous C to sub-bituminous A thermal coal. The mining potential of the property must, however, be considered a long term proposition due to its remoteness, lack of infrastructure and current poor market conditions.

# 1.0 INTRODUCTION

## 1.1 Location and Access

The Coal Mine Lake Property is located in the Northwest Territories on the western edge of the Mackenzie Delta, approximately 110 km northwest of Inuvik. The western boundary of the property coincides with the Yukon border (Figure 1). Coal Mine Lake, in the northwestern portion of the property, is accessible by boat or float plane. Other parts of the property are accessible only by helicopter.

## 1.2 Land Tenure

In April, 1981, the Federal Government issued Coal Licence 156 to Petro-Canada Exploration Inc. The licence covers the area of coal-bearing sediments in the vicinity of Coal Mine Lake (Figure 8). The licence comprises 25,628 hectares bounded by the Yukon border on the west, 136°00'W longitude on the east and by 68°45'N and 68°37'30"N latitude on the north and south, respectively.

## 1.3 Physiography

The Coal Mine Lake property encompasses part of the western margin of the Mackenzie Delta. The licence area includes a portion of the delta lowlands which are comprised of myriad lakes, channels and swamps only a few meters above sea level. Southwest of the delta lowlands the property becomes a relatively flat, tundra covered plateau. Low shrubs and grasses dominate the tundra vegetation but thick growths of alder occur in the creek valleys which dissect the plateau.

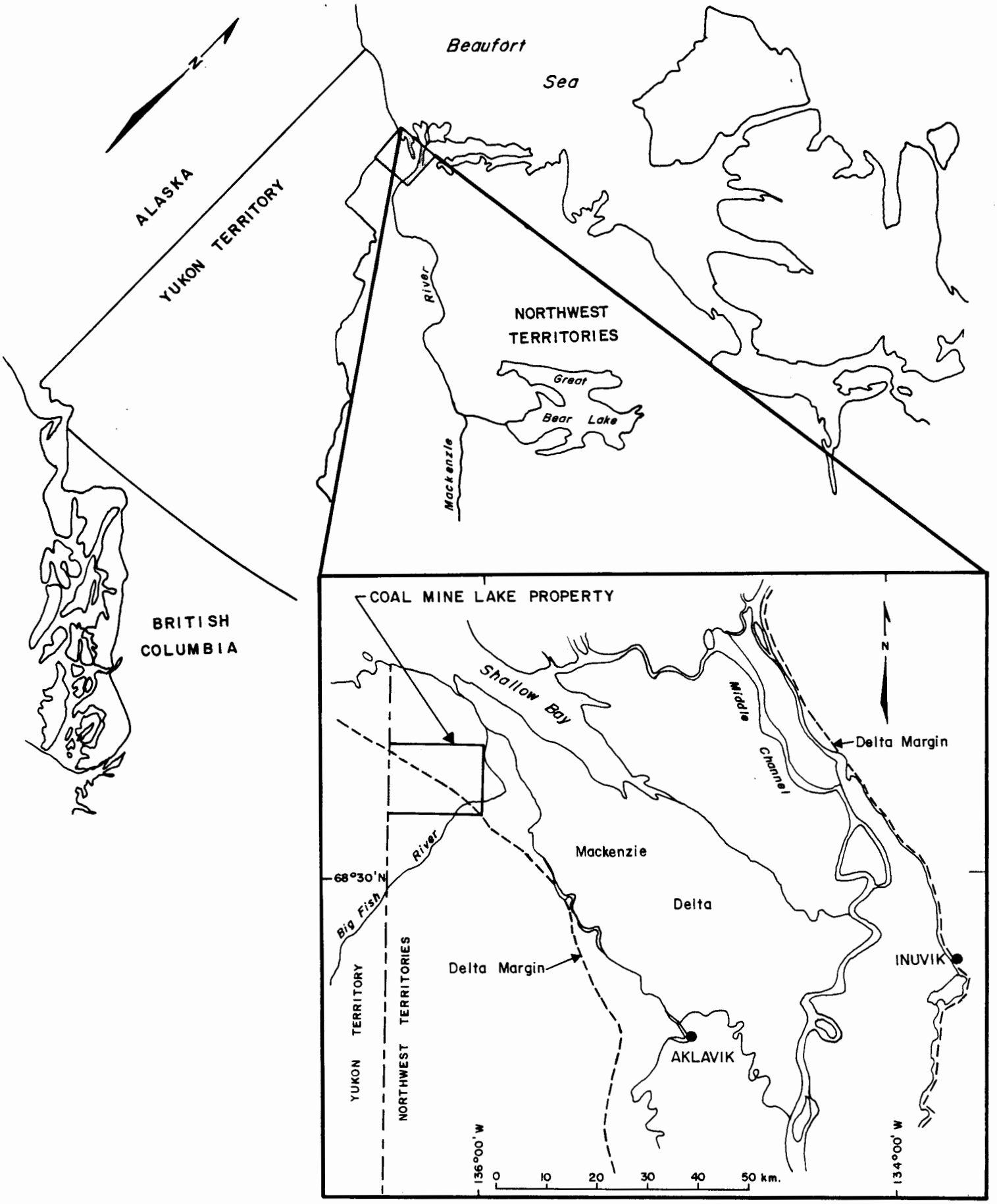



FIGURE 1: COAL MINE LAKE PROPERTY LOCATION MAP

The plateau elevation increases from approximately 100 m at the delta margin to above 200 m in the southwestern portion of the property. Stream valleys are about 100 m deep, generally trend northeast and are steep sided. The larger valleys are flat-bottomed with meandering water courses. The Big Fish River, located in the eastern portion of the property, is the major river draining this part of the Mackenzie Delta area (Figure 1).

The Coal Mine Lake area experiences short summers with temperatures averaging 15°C and long, cold winters with average temperatures of about -30°C. Precipitation is relatively low: 10-12 cm of rainfall (mostly in July and August) and 150-220 cm of snowfall in the winter. Winds usually blow from the west or northwest at about 10 km per hour although occasional gusts over 100 km per hour have been recorded. Summer fog is common in this area and, in winter, ice fog can form if humidity is high.

The Coal Mine Lake area experiences 24 hours of daylight from the end of May until mid-July. From early December to mid-January the sun never rises above the horizon.

## 1.4 Exploration History

Coal outcrops in the Coal Mine Lake area were initially discovered by the Inuit. From 1940 to 1956 coal was mined from a near vertical seam outcropping on Coal Mine Lake and barged to Aklavik where it was used as domestic fuel.

The geology of the Coal Mine Lake area has been investigated by various officers of the Geological Survey of Canada since 1915. In April 1981, Petro-Canada Exploration Inc. was issued exploration licence 156, which covers the area of reported coal bearing strata (Figure 8). In July 1981, a Petro-Canada reconnaissance crew visited the area and verified the existence of potentially economic coal seams. In July and August 1982, a three-man crew carried out a detailed mapping and sampling program on the property.

# 2.0 1982 EXPLORATION PROGRAM

## 2.1 Objective

To establish, by plane table mapping and trenching, a preliminary interpretation of the structure, coal quality and resource potential of the Aklak Member of the Reindeer Formation in the vicinity of Coal Mine Lake.

## 2.2 Field Camp

The 1982 field program commenced in July with the establishment of a three man base camp on the property. Expediting and transportation services were secured in Inuvik and the camp was mobilized by air on July 7. The camp was expanded on July 9 in order to accommodate a three person survey crew. A Bell 206B helicopter was utilized for transportation within the property where access by foot was impractical. The camp was destroyed by a windstorm on July 24 and subsequent work was carried out from Inuvik. The field program was completed on August 11.

Petro-Canada staff involved in the project are listed in Table 1 and suppliers and contractors are listed in Table 2.



PLATE 1 Inuvik, N.W.T. on the eastern margin of the Mackenzie Delta



PLATE 2 A float plane was used to transport equipment and supplies from Inuvik to Coal Mine Lake



PLATE 3 Looking south across the tundra covered plateau in the vicinity of Archer Creek (middle right). Note prominent scarp between swampy lowlands and stream dissected uplands



PLATE 4 A Bell 206B helicopter was used for transporting supplies from Coal Mine Lake to the field camp



PLATE 5 The field camp near the upper reaches of Camp Creek



PLATE 6 Most of the property is covered with low bushes and grasses. View looking east across Camp Creek



PLATE 7 Mosquito nets are mandatory field gear in the Mackenzie Delta area

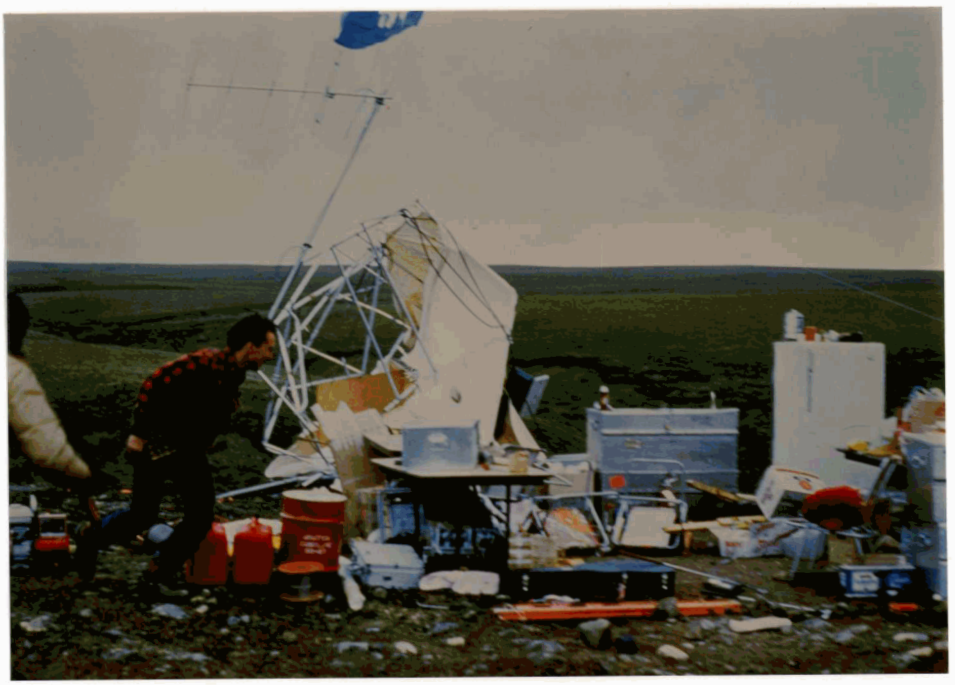


PLATE 8 Winds gusting to 100 km/hr destroyed the base camp on July 24

TABLE 1

COAL MINE LAKE COAL PROJECT

PETRO-CANADA PERSONNEL

| | |
|---|---|
| F. Gigliotti | Senior Geologist |
| D. Hope | Geologist |
| L. Samoil | Geological Assistant |
| G. Archer | Geological Assistant |
| L. Fabbro | Geological Assistant |

TABLE 2

CONTRACTORS AND SERVICES

| | |
|---|---|
| **Aircraft Charter** | |
| Aklak Air Ltd. | Inuvik, N.W.T. |
| Okanagan Helicopters Ltd. | Inuvik, N.W.T. |
| **Camp and Catering** | |
| Alberta Government Telephones | Edmonton, Alta. |
| Arctic Esso Service | Inuvik, N.W.T. |
| Campus Supply Company Ltd. | Calgary, Alta. |
| Canadian Survey Outfitters | Vancouver, B.C. |
| Chatham Steel Northern Ltd. | Inuvik, N.W.T. |
| Eskimo Inn | Inuvik, N.W.T. |
| Explosives Ltd. | Inuvik, N.W.T. |
| Finto Motor Inn | Inuvik, N.W.T. |
| Hudson's Bay Company | Inuvik, N.W.T. |
| Imperial Oil Limited | Inuvik, N.W.T. |
| Matco Transportation Systems | Inuvik, N.W.T. |
| Mico Enterprises | Invuik, N.W.T. |
| Neville Crosby Inc. | Vancouver, B.C. |
| R.D.R. Sports Ltd. | Inuvik, N.W.T. |
| Ribtor Manufacturing & Distribution Co. | Calgary, Alta. |
| Steel Plast Canada Ltd. | Calgary, Alta. |
| **Assaying and Testing** | |
| Cascade Coal Petrography | Calgary, Alta. |
| David E. Pearson & Associates Ltd. | Victoria, B.C. |
| Loring Laboratories | Calgary, Alta. |
| **Surveying and Photogrammetry** | |
| Hosford, Impey, Welter & Associates Ltd. | Yellowknife, N.W.T. |
| Northwest Survey Corporation | Edmonton, Alta. |
| **Rental Vehicles** | |
| Tilden Rentals | Invuik, N.W.T. |
| **Trucking and Freight** | |
| Canadian Freightways Ltd. | Edmonton, Alta. |
| Matco Transportation Systems | Inuvik, N.W.T. |
| Pacific Western Airlines | Inuvik, N.W.T. |

## 2.3 Surveying

During the period from July 10 to July 19, a survey grid was established on the property to provide control for plane table mapping and to facilitate the location of future drill holes. Control points, including several air photo targets, were established throughout the property on a one km grid. Subsequent to the survey program 1:42,000 scale aerial photographs were taken of the property in order to produce 1:5000 scale topographic maps. The control point grid map is included in Appendix F and the control point coordinates are listed in Table 3.

## 2.4 Geologic Mapping

Detailed geologic mapping, at a scale of 1:5000, was carried out from early July to early August. An alidade and plane table were used for mapping and traverses were tied to the surveyed control points. The mapping program concentrated on creek valleys which dissect the tundra overburden. Geologic information was plotted on preliminary field sheets and then transferred to the topographic maps when they became available. In addition to mapping, four stratigraphic sections (Figures 4, 5, 6 and 7) were measured. Geologic maps and cross-sections, at a scale of 1:5000 are included in Appendices A and B.

## 2.5 Trenching

Twenty-one trenches were excavated to expose and sample the coal seams of the Aklak Member. The trenches were logged and representative samples of the coal seams were shipped to Loring Laboratories for analysis. The trench logs are contained in Appendix D (illustrated) and E (written) and the laboratory test results are contained in Tables 5, 6, 7 and 8.



PLATE 9 Alidade and plane table mapping. View looking northward with the Mackenzie Delta in the background



PLATE 10 Trench T-4 exposed Seam 2 on Aklak Creek

## 3.0 ACKNOWLEDGEMENTS

The writer wishes to acknowledge the assistance of L. Samoil, G. Archer and L. Fabbro during the field program. The helpful comments of S. P. Santiago and W. Plachner of Petro-Canada Exploration Inc. are also greatfully acknowledged.

TABLE 3

SURVEY CONTROL POINTS

UTM CO-ORDINATES

ZONE 8 CENTRAL MERIDIAN 135°

| STATION | NORTH | SOUTH | ELEVATION (M) |
|---|---|---|---|
| WHITE | 7618860.47 | 446791.32 | 132.6 |
| 2400 | 7618391.39 | 446026.65 | 109.0 |
| 2401 | 7618172.15 | 446127.38 | 117.7 |
| 2402 | 7618104.33 | 446725.62 | 137.9 |
| 2403 | 7617063.49 | 446855.17 | 152.9 |
| 2404 | 7616919.69 | 446195.10 | 171.7 |
| 2405 | 7616204.28 | 446978.00 | 181.5 |
| 2406 | 7616206.43 | 448164.66 | 158.2 |
| 2407 | 7615535.74 | 448235.48 | 194.0 |
| 2408 | 7615388.16 | 449154.58 | 201.8 |
| 2409 | 7615991.98 | 448969.86 | 178.7 |
| 2410 | 7616870.48 | 448873.18 | 147.5 |
| 2411 | 7616913.35 | 447984.73 | 145.3 |
| 2412 | 7617686.16 | 447938.27 | 136.0 |
| 2413 | 7617667.12 | 448307.23 | 142.8 |
| 2414 | 7617537.25 | 448843.18 | 148.3 |
| 2415 | 7617795.90 | 449775.15 | 121.1 |
| 2416 | 7617931.18 | 450516.30 | 114.7 |
| 2417 | 7617030.23 | 450341.82 | 128.9 |
| 2418 | 7617235.83 | 449662.46 | 131.7 |
| 2419 | 7615982.00 | 449905.36 | 169.9 |
| 2420 | 7615881.57 | 450323.58 | 176.9 |
| 2421 | 7615787.68 | 450790.63 | 171.2 |
| 2422 | 7615929.76 | 451713.90 | 137.5 |
| 2423 | 7615101.58 | 451970.34 | 160.1 |
| 2424 | 7614938.52 | 451428.59 | 184.5 |
| 2425 | 7614972.88 | 449871.18 | 202.5 |
| 2426 | 7614428.81 | 453334.86 | 104.6 |
| 2427 | 7614761.83 | 453887.95 | 79.5 |
| 2428 | 7615940.25 | 454132.47 | 13.30 |
| 2429 | 7616232.94 | 452606.08 | 110.9 |
| 2430 | 7617262.31 | 453697.87 | 9.0 |
| 2431 | 7617119.74 | 451861.05 | 86.50 |
| 2432 | 7621635.02 | 442970.12 | 106.4 |
| 2433 | 7618775.43 | 450014.36 | 36.4 |

TABLE 3, cont'd.

UTM CO-ORDINATES



| STATION | NORTH | SOUTH | ELEVATION (M) |
|---|---|---|---|
| 2434 | 7619558.11 | 447944.53 | 94.9 |
| 2435 | 7618740.33 | 448208.83 | 110.4 |
| 2436 | 7621536.68 | 446614.41 | 2.6 (ADIT) |
| 2437 | 7618954.02 | 449042.06 | 90.0 |
| 2438 | 7622303.71 | 444888.83 | 61.4 |
| 2439 | 7619943.92 | 446791.33 | 84.3 |
| 2440 | 7623611.18 | 441721.59 | 96.8 |
| 2441 | 7621500.13 | 445672.07 | 55.8 |
| 2442 | 7622788.01 | 443026.13 | 92.2 |
| 2443 | 7623079.23 | 443792.88 | 80.6 |
| 2444 | 7621300.47 | 446465.67 | 44.8 |
| 2445 | 7620575.68 | 446697.65 | 72.2 |
| 2446 | 7622586.76 | 440826.54 | 107.9 |
| 2447 | 7624075.85 | 440959.97 | 93.9 |
| 2448 | 7621360.37 | 440850.02 | 112.1 |
| 2449 | 7623063.67 | 442224.64 | 94.0 |
| 2450 | 7619517.50 | 444501.83 | 109.5 |
| 2451 | 7621914.40 | 441884.68 | 103.7 |
| 2452 | 7617345.94 | 443247.53 | 145.5 |
| 2453 | 7618998.45 | 445101.02 | 116.2 |
| 2454 | 7620667.97 | 444878.76 | 94.4 |
| 2455 | 7621589.48 | 443711.24 | 103.1 |
| 2456 | 7620338.35 | 443593.87 | 101.6 |
| 2457 | 7619351.43 | 441338.27 | 144.2 |
| 2458 | 7617960.21 | 445054.58 | 123.10 |
| 2459 | 7618241.65 | 444154.94 | 140.6 |
| 2460 | 7618046.48 | 441435.79 | 190.8 |
| 2461 | 7620088.88 | 441713.43 | 109.7 |
| 2462 | 7617339.90 | 441926.21 | 171.1 |
| 2463 | 7619358.89 | 442108.99 | 142.4 |
| 2464 | 7618305.95 | 442700.03 | 158.8 |
| 2465 | 7619477.25 | 443580.59 | 110.1 |
| 2467 | 7622103.62 | 446729.00 | .50 |
| 2468 | 7620726.34 | 446041.69 | 77.2 |
| 2469 | 7616892.43 | 445085.75 | 120.6 |

## 4.0 REGIONAL GEOLOGICAL SETTING

The sediments exposed on the Coal Mine Lake property are part of a series of Cenozoic molassic wedges that were deposited into the Richards Island Basin, a pericratonic basin in the vicinity of Richards Island (Figure 2, Table 4).

The oldest strata exposed on the Coal Mine Lake property are the coarse, terriginous clastics of the lower Moose Channel Formation. This basal member represents the first regressive sedimentation of the Cenozoic sequence. It is comprised of sandstone, conglomerate, claystone and rare coal deposited in fluvial, delta plain, littoral and shallow marine environments. The interbedded sandstones and conglomerates probably represent braided or meandering stream systems. They are rich in chert, volcanic and metamorphic rock fragments, quartz and feldspar which are indicative of source areas to the south and west of the Richards Island Basin. Paleocurrent directions tend to support an eastward transport direction.

Cessation of deltaic sedimentation and the onset of a transgression resulted in the deposition of marine claystones and siltstones which formed the upper portion of the Moose Channel Formation. Rare, thin sandstone bodies within this unit are thought to represent offshore bars. This upper, marine section is known as the Ministicoog Member and it outcrops in the southern and western portions of the Coal Mine Lake property. Foraminifera recovered from the Moose Channel Formation were dated as earliest Tertiary. The Moose Channel Formation varies from 700 to 1100 m in thickness and is about 1100 m thick in the Coal Mine Lake area.

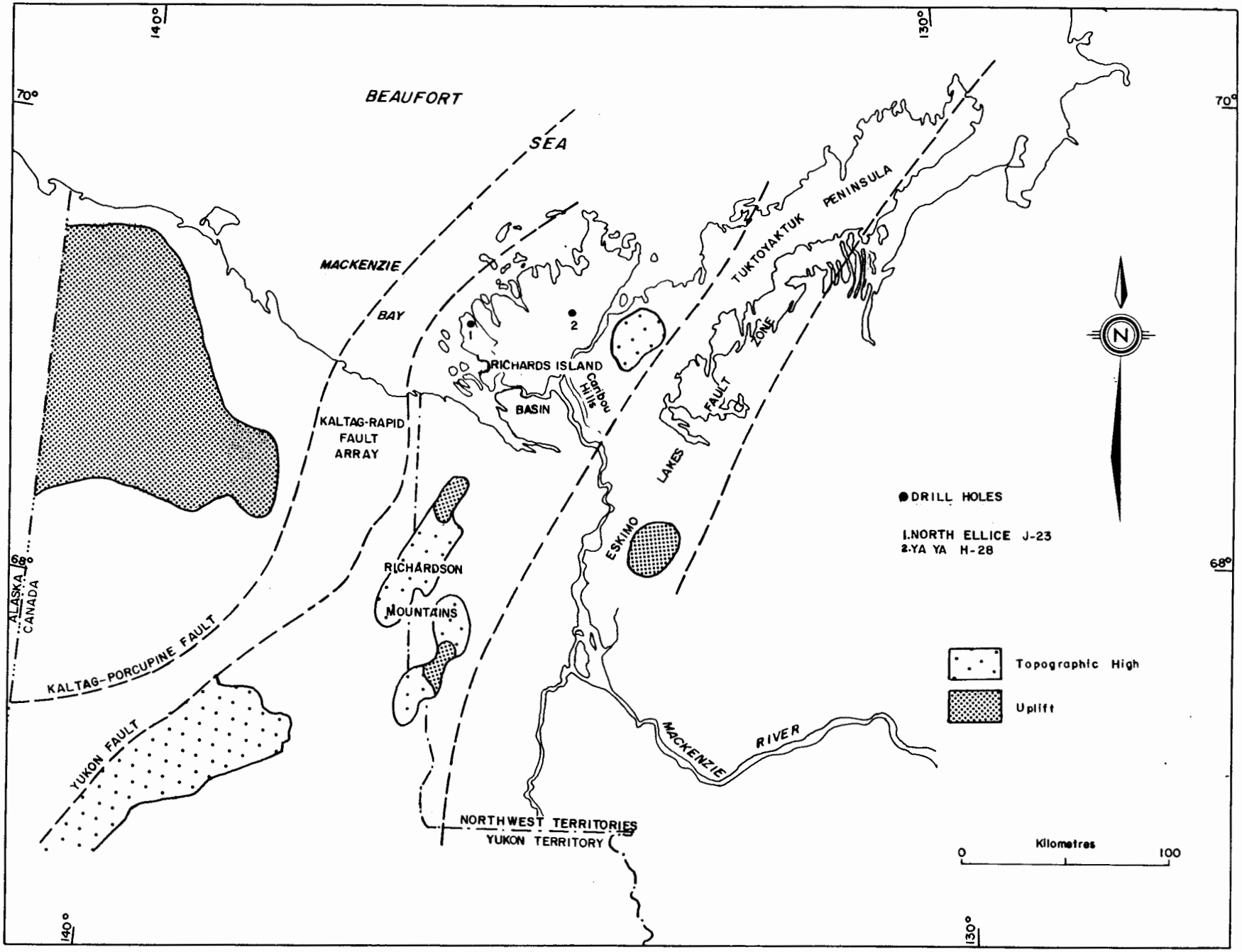



FIGURE 2: LARAMIDE TECTONIC ELEMENTS AND DRILL HOLE LOCATIONS (AFTER YOUNG ET AL, 1976)

# TABLE 4

## TABLE OF FORMATIONS*

| SYSTEM | SERIES | FORMATION | LITHOLOGY/MEMBER |
|---|---|---|---|
| PALEOGENE | EOCENE | RICHARDS | Silty, sandy claystones, scattered chert pebbles and granules, minor bentonitic beds |
| | | REINDEER | Upper member - Alternating units of fine to coarse grained sandstone and silty claystone<br><br>Aklak member - Interbedded conglomerate, sandstone, siltstone, claystone and coal |
| | PALEOCENE | MOOSE CHANNEL | Ministicoog member - Interbedded claystone and siltstone, minor sandstone<br><br>Basal sandstone member - conglomerate, sandstone and claystone, rare coal |
| CRETACEOUS | | TENT ISLAND | Claystone, siltstone, calcareous in part, minor sandstone<br><br>Cuesta Creek member - Interbedded sandstone, conglomerate and claystone |

* *This report is confined to discussions involving the Reindeer and Moose Channel Formations. The Richards and Tent Island Formations are included in this table in order to better demonstrate the relative chronological positions of the Reindeer and Moose Channel Formations.*

*... after Young and McNeil, 1982*

The second major molassic wedge began to prograde eastward during the mid-Paleocene as tectonic uplands to the south and west began to shed clastic debris into the Richards Island Basin. Uplifts along the Eskimo Lakes Fault Zone to the east (Figure 2) also provided a source of sediments at this time. Regressive sedimentary deposition began to occur in the Tuktoyaktuk Peninsula area and, together with the eastward prograding wedge, formed a wide coastal plain comprised of paludal, fluvial and alluvial fan facies. The coastal plain extended from Alaska to the northern portion of the Tuktoyaktuk Peninsula. This second regressional sequence constitutes the Reindeer Formation.

The contact between the Reindeer Formation and underlying Moose Channel Formation is conformable west of the Mackenzie Delta but is unconformable in the vicinity of the Caribou Hills north of Inuvik (Figure 2). The Reindeer Formation is at least 1200 m thick at its type section in the Caribou Hills. It reaches its maximum intersected thickness of 2,160 m in the North Ellice J-23 drill hole and its minimum intersected thickness of 485 m in the Ya Ya A-28 drill hole (Figure 2). The formation thins towards the southern margin of the Richards Island Basin area.

The Reindeer Formation was deposited in a shallow marine and fluvio-deltaic environment. The lower portion of the Reindeer Formation is known as the Aklak member. In the vicinity of Coal Mine Lake it is comprised of massive sandstones, pebble to cobble conglomerates, siltstones, claystones and coal. It probably represents a delta plain complex dominated by distributary channels, shallow swamps and brackish water bays (Young, 1976). Red coloured sandstone, siltstone and claystone bocanne zones occur throughout the Coal Mine Lake property as a result of lightning-induced thermal metamorphism of the original lithotypes (Archer, 1983). The lower 300 m of the Aklak Member comprise the youngest sediments exposed on the property.

The upper parts of the Reindeer Formation indicate sedimentation in the marine dominated portion of a deltaic complex. The coarsening upward cycles and relatively thick claystone units in this part of the formation are indicative of interfingering arrays of delta front sand sheets, distributary mouth bars and pro-deltaic muds (Young and McNeil, 1982, Young 1976). The Reindeer Formation is Paleocene to Eocene in age and is dominated by terrestrial, temperate climate palynomorphs.

By early to mid-Eocene time clastic influx into the Richards Island Basin decreased and another marine transgression was initiated. This transgression marked the end of Reindeer Formation deposition.

# 5.0 STRATIGRAPHY OF THE COAL MINE LAKE PROPERTY

## 5.1 Moose Channel Formation

The Moose Channel is the oldest formation exposed on the Coal Mine Lake property. The lower 500 m of this 1100 m thick succession are composed of interbedded sandstones with some conglomerate. These rocks represent fluvio-deltaic and shallow marine environments of deposition.

The sandstone-conglomerate section is overlain by approximately 600 m of thinly interbedded marine siltstone and claystone. Only 150 m of this unit are exposed on the property but it forms a recessive zone which can be traced across the entire licence area. This upper unit is known as the Ministicoog Member.

The Reindeer Formation-Moose Channel Formation contact is exposed on Aklak Creek where the upper 30 m of the Moose Channel Formation outcrop. At this location fine to medium grained, brown, micaceous Moose Channel sandstone grades upwards into the coarse grained, basal sandstone of the Reindeer Formation. The contact was exposed in trench T-14 on Aklak Creek.

## 5.2 Aklak Member, Reindeer Formation

The coal measures of the Coal Mine Lake Property are contained within the Tertiary Aklak Member of the Reindeer Formation. The Aklak Member is a sequence of interbedded conglomerates, sandstones, siltstones, claystones and coal seams deposited in a stream-dominated delta plain complex. Thirteen coal zones have been recognized within a stratigraphic thickness of 300 m. The upper part of the Aklak Member has been eroded from the Coal Mine Lake area.

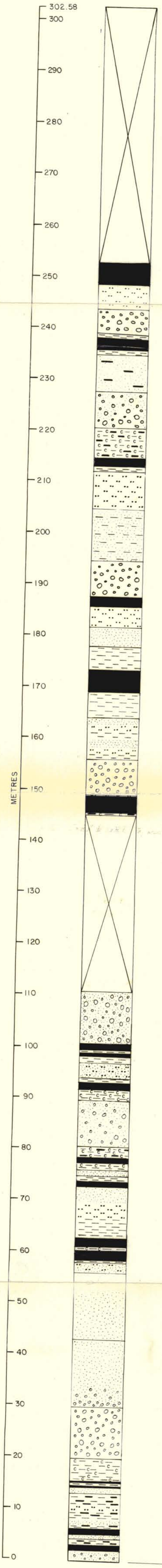
## 5.3 Detailed Stratigraphy of the Aklak Member

The following description is based on information gathered from outcrops and trenches examined on the Coal Mine Lake property (refer to the stratigraphic column in Figure 3). The measured sections are illustrated in Figures 4, 5, 6 and 7 . Trench log illustrations are contained in Appendix D and trench and measured section written logs are contained in Appendix E. Measured sections and trenches are located on the geologic maps in Appendix A. Coal seams are numbered consecutively from one to thirteen (oldest to youngest).

The contact between the Reindeer and Moose Channel Formations is exposed in Aklak Creek and has been placed at the base of a thin (approximately 2 m) coarse grained, salt and pepper sandstone which underlies the lowermost coal seam. This sandstone unit fines downward into the brown, micaceous sandstone of the upper Moose Channel Formation.

### Seam 1

The lowermost coal zone of the Aklak Formation rests directly on the basal sandstone. It is about 5 m thick and consists of two benches separated by 2.1 m of sandstone and coaly claystone. The upper bench is about 1.5 m thick and the lower, which contains numerous thin claystone splits is 1.2 m thick.




Occasional sandstone float and coal spoil

SEAM 13 : T-12, few thin rock bands

SEAM 12 : T-20

Poor exposure : sandstone and coal spoil

SEAM 11 : T-2

Chert and qtzite pebble

SEAM 10, Coal spoil zone

SEAM 9 : T-15

Float

Chert and qtzite pebble, occasional coal pebbles

SEAM 8 : T-1 and T-18

SEAM 6-7 Zone. Some exposures of claystone and coal spoil

Chert and qtzite pebbles

SEAM 5 : T-6

SEAM 4 : T-7 and T-10

Chert-qtzite pebbles

SEAM 3 : T-17

SEAM 2 : T-4 and T-16

Chert and qtzite pebble

SEAM 1 : T-14

Numerous claystone splits
Aklak Member
Moose Channel Formation

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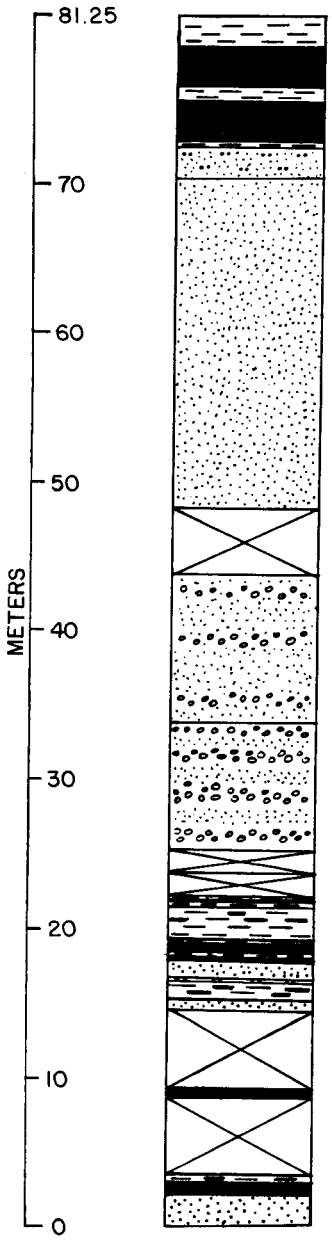
COAL DIVISION

| | |
|---|---|
| DATE | MAY, 1983 |
| REVISED | |
| AUTHOR | F. B. G. |
| DRAFTED | S. K |
| SCALE | 1:500 |

COAL MINE LAKE PROJECT

# FIGURE 3
# GENERAL STRATIGRAPHIC COLUMN




SEAM 2 : CML-82-T-4

Conglomerate rubble
Claystone float

Medium grained sandstone rubble

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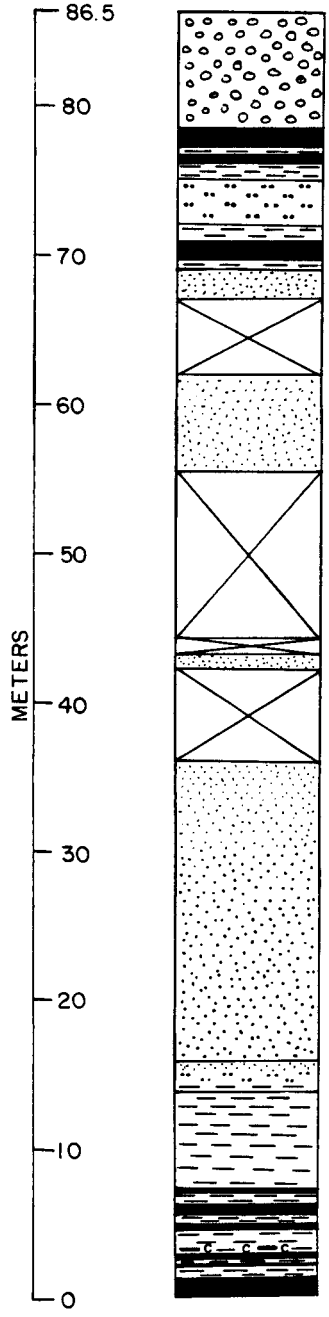
COAL DIVISION

| | |
|---|---|
| DATE | MARCH, 1983 |
| REVISED | |
| AUTHOR | F.G., L.S. |
| DRAFTED | S.K. |
| SCALE | 1:500 |

COAL MINE LAKE PROJECT

**FIGURE 4**

MEASURED SECTION 1




SEAM 5: CML-82-T-6

SEAM 4: CML-82-T-7

Very fine grained sandstone float, coal spoil at base

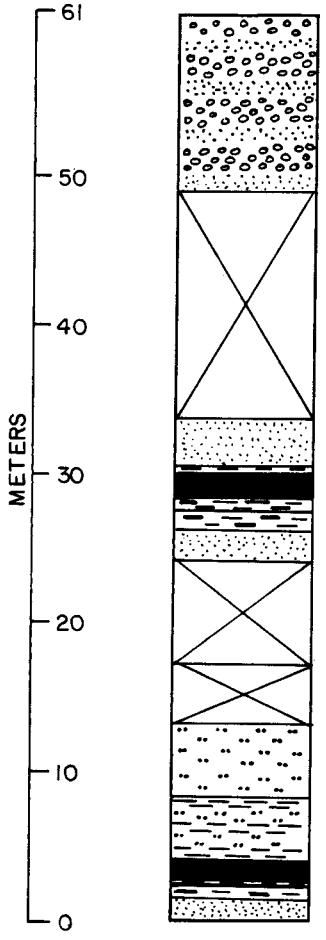
Siltstone and claystone float

Very carbonaceous claystone float

SEAM 1: CML-82-T-8

Section base at Aklak Creek

| | |
|---|---|
| PETRO CANADA<br>COAL DIVISION | COAL MINE LAKE PROJECT |
| DATE: MARCH, 1983 | FIGURE 5 |
| REVISED | MEASURED SECTION 2 |
| AUTHOR: F.G., G.A. | |
| DRAFTED: S.K. | |
| SCALE: 1:500 | |

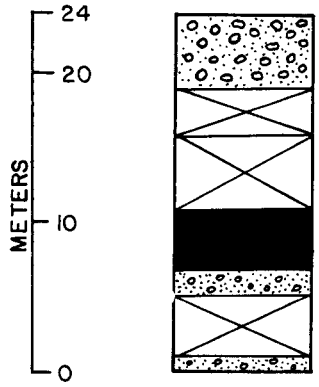



SEAM 4 : CML-82-T-10

Some coal spoil

SEAM 2 : CML-82-T-11

| | |
|---|---|
| PETRO-CANADA COAL DIVISION | COAL MINE LAKE PROJECT |
| DATE: MARCH, 1983 | FIGURE 6 |
| REVISED: | MEASURED SECTION 3 |
| AUTHOR: F.G., G.A. | |
| DRAFTED: S. K. | |
| SCALE: 1:500 | |




Conglomerate talus

Coal spoil at top

SEAM 1

PETRO CANADA
COAL DIVISION

| | |
|---|---|
| DATE | MARCH, 1983 |
| REVISED | |
| AUTHOR | F.G., L.S. |
| DRAFTED | S.K. |
| SCALE | 1:500 |

COAL MINE LAKE PROJECT

FIGURE 7

MEASURED SECTION 4

Seam 1 - Seam 2 Interburden

The interburden between Seams 1 and 2 is a 51.3 m thick zone composed, predominantly, of sandstone with a coaly zone at the base. The lower 6.9 m is comprised of coaly claystone with some siltstone and sandstone. This unit is overlain by one meter of medium grained sandstone which is then overlain by a one meter thick coaly zone. The coaly zone consists of two thin coal splits separated by a half meter of carbonaceous claystone. It is overlain by 4.4 m of claystone which is, in part, carbonaceous.

The upper 38 m of the Seam 1 - Seam 2 interburden zone is composed of sandstone and conglomerate. The lower 10 m of the unit consist of chert and quartzite pebble conglomerate. The pebbles are poorly sorted and range from 1 to 15 cm in diameter with an average diameter of 3 cm. The pebbles tend to be matrix-supported by medium grained sandstone and are moderately to well rounded and imbricated. The unit contains occasional bands of ironstone concretions and weathers a reddish colour. The conglomerate is overlain by a section of fine grained sandstone which contains interbeds of coarser material, especially towards the base. The lower portion of this unit is somewhat poorly consolidated and weathers to form sandy scree slopes. The upper portion of the unit has a flaggy or platy appearance due to weathering along bedding planes. The uppermost 2 m of the sandstone unit are relatively resistant and contain occasional siltstone lenses. A thin (0.5 m) claystone bed overlies the sandstone and forms the floor of coal Seam 2.

Seam 2

Seam 2 is a split seam 5.8 m thick. The 2.4 m thick upper bench is separated from the 2.5 m thick lower bench by 0.9 m of claystone. Trenches T-4 and T-5 expose Seam 2 on Aklak Creek. Coal exposed in trench T-11 has been tentatively correlated with Seam 2 and appears to expose the upper bench of the seam. In the eastern portion of the property (Lightning Creek area) Seam 2 has been tentatively correlated with coal exposed in trench T-16 where an upper bench, 1.5 m in thickness, is separated from a 1.3 m thick lower bench by 40 cm of carbonaceous claystone.

Seam 2 - Seam 3 Interburden

The Seam 2 - Seam 3 interburden zone is poorly exposed on Aklak Creek but occasional outcrops indicate a zone of siltstone and claystone about 10 m thick. A unit of similar thickness (5 to 15 m) consisting of claystone and sandstone separates these seams in the eastern part of the property. Conglomeratic scree was also observed within this zone.

Seam 3

Coal Seam 3 is not exposed in the Aklak Creek section and its location is approximated by occurrences of coal spoil in heavily covered areas. Seam 3, exposed in trench T-17 in the eastern part of the property, contains three coal splits. The entire zone is 5.5 m thick and consists of a 0.9 m thick upper bench, a 0.9 m thick middle bench and a 1.2 m thick lower bench. The upper rock split is 1.4 m thick and is composed of claystone which is carbonaceous at the top. The lower rock split consists of one meter of light grey, medium grained sandstone overlying 8 cm of claystone.

Seam 3 - Seam 4 Interburden

The zone between Seams 3 and 4 is 10 to 15 m thick in the Aklak Creek area. Poorly exposed fine grained sandstone is overlain by coaly claystone in this section. The claystone is 0.5 to 2.5 m thick and forms the floor of Seam 4 in trenches T-7 and T-10. The Seam 3 - Seam 4 interburden zone is 11 m thick in the eastern part of the property (T-17 area). The basal 2 m of this zone consist of coaly, carbonaceous claystone. The claystone is overlain by conglomerate interbedded with coarse grained sandstone. The conglomerate is composed of well rounded chert and quartzite pebbles which vary in diameter from 0.5 to 20 cm. This conglomeratic unit appears to represent a facies which is not present in the Aklak Creek section.

Seam 4

Seam 4 is exposed in the Aklak Creek area where it is 1.4 m thick in T-7 and 1.7 m thick in T-10. The base of Seam 4 in T-7 contains abundant claystone partings.

Seam 4 - Seam 5 Interburden

The zone between Seams 4 and 5 is 5 m thick and is composed of sandstone, siltstone and claystone. Claystone, comprising the lower meter of the unit, is overlain by a 3 m section which varies from sandstone to siltstone in composition. This latter unit is overlain by one meter of claystone which forms the floor of Seam 5.

Seam 5

Seam 5 consists of a 1.4 m thick upper bench separated from a 0.6 m thick lower bench by 0.4 m of claystone. This seam is not exposed in the eastern part of the property.

Seam 5 - Seam 6 Interburden

The Seam 5 - Seam 6 interburden zone consists of a 7 to 10 m thick conglomerate unit which is a prominent marker horizon in the Aklak Creek area. The conglomerate is similar to those measured lower in the section consisting of well rounded chert and quartzite pebbles and cobbles. The clasts vary in size from 0.5 cm to 20 cm in diameter with an average diameter of 5 cm. They are poorly sorted with a greater proportion of the larger cobbles occurring near the top of the unit. Medium grained sandstone constitutes the matrix and also occurs as lenses within the conglomerate. The unit is sandier towards the base.

Seam 6 - Seam 7 Zone

Seams 6 and 7 are not well exposed and their locations are approximate, based on coal spoil locations on Aklak Creek. The section between the top of the above-mentioned conglomerate and the base of Seam 8 is about 35 m thick. This zone is characterized by limited outcrops of conglomerate, sandstone and some claystone and coal spoil. The uppermost 0.6 m of this zone was exposed in trench T-1 and is composed of carbonaceous claystone interbedded with coal bands.

Seam 8

Seam 8 is the basal seam of a recessive zone which can be correlated from Camp Creek to Archer Creek (Figure 8). The seam is at least 3.3 m thick (T-1, T-18) and is free of rock splits.

Seam 8 - Seam 9 Interburden

The interseam zone between Seams 8 and 9 is poorly exposed but is estimated to be about 20 m thick and consists of conglomerate overlain by interbedded sandstone, siltstone and claystone. The conglomerate consists of chert, quartzite and rare coal pebbles in a coarse grained sandstone matrix. A partial exposure of the fine to medium grained sandstone, siltstone and claystone unit is located stratigraphically above the conglomerate on Camp Creek. It is 5 m thick and is, in turn, overlain by a 5 m thick claystone spoil zone. Seam 9 overlies this claystone.

Seam 9

Seam 9 was examined in the Aklak Creek, Camp Creek and Archer Creek areas. The seam is at least 4.4 m thick and is split by three thin (less than 25 cm) claystone interbeds.

Seam 9 - Seam 10 Interburden

The interburden between Seams 9 and 10 is 10 to 15 m thick on Camp Creek. This zone consists of 4.5 m of somewhat carbonaceous claystone overlain by 3 to 4 m of fine grained sandstone which is, in turn, overlain by 3 to 5 m of siltstone. This section is thinner in the eastern part of the property where the claystone is overlain by 2 m of fine grained sandstone and, in turn, by 3.5 m of siltstone.

Seam 10

Seam 10 is not exposed but its position and approximate thickness (2 m) have been determined using coal spoil locations.

Seam 10 - Seam 11 Interburden

The Seam 10 spoil zone is overlain by an estimated 20 to 25 m of siltstone, sandstone and conglomerate. The conglomerate is weathered to chert and quartzite pebble gravel and is probably 5 to 10 m thick. This unit also occurs as gravel scree near the Delta margin east of Camp Creek. Ten meters of very fine to medium grained sandstone, containing occasional claystone interbeds, overlie the conglomerate and are, in turn, overlain by 5 to 10 m of siltstone. The one meter thick claystone floor of Seam 11 (Trench T-21) overlies this siltstone.

Seam 11

Seam 11 was only exposed on Camp Creek (T-21) where it is 1.4 m thick.

Seam 11 - Seam 12 Interburden

The Seam 11 - Seam 12 interburden zone is poorly exposed but limited outcrop indicates an interseam thickness of about 21 m. Seam 11 is overlain by a 6 m thick claystone and carbonaceous claystone zone which contains several thin (10-30 cm) coal beds. This unit is overlain by about 7 m of coarse grained sandstone and conglomerate. A 7 m thick unit of sandstone and coal (indicated by coal spoil zones) overlies the conglomeratic section and is, in turn, overlain by the one meter thick claystone floor of Seam 12.

Seam 12

The position of Seam 12 is delineated by coal spoil and subcrop areas on lower Aklak Creek. Coal spoil on the eastern flanks of the lower Aklak Creek valley indicates a seam thickness of about one meter. The 2.2 m thick seam exposed in T-20, on the western side of the lower Aklak Creek valley, has been correlated with Seam 12. It consists of a 1.5 m upper bench and a 0.4 m lower bench separated by a 33 cm sandstone and claystone split.

Seam 12 - Seam 13 Interburden

The section between Seams 12 and 13 is about 11 m thick. It consists of a one m thick basal claystone unit overlain by 5 m of conglomerate which is, in turn, overlain by 5 m of siltstone.

Seam 13

Seam 13, trenched in T-12, is 4 m thick and contains a few thin rock bands. It was mined at a location just south of T-12 on the western flank of the Aklak Creek valley and at Coal Mine Lake west of Aklak Creek (see abandoned minesite locations on Maps 2 and 4, Appendix A).

Seam 13 - Overburden

Seam 13 is overlain by an estimated 50 m of covered section in which there are occasional zones of sandstone and coal spoil. The rocks within this section are the youngest strata occurring on the Coal Mine Lake Property.

## 6.0 REGIONAL STRUCTURAL GEOLOGY

The molassic wedge succession which includes the Moose Channel and Reindeer Formations was deposited following Columbian Orogeny compression, uplift and erosion of Lower Cretaceous rocks. Uplift and faulting (both normal block faulting and thrusting) continued intermittently throughout the Tertiary as pre-existing structural elements were re-activated. Laramide and/or Columbian Orogenic movements also resulted in continued depression of the Richards Island Basin enhancing the accumulation of the thick Upper Cretaceous-Tertiary molassic sequence (refer to Section 4.0). The Rapid Fault Array (Figure 2), which experienced initial dextral movements in the early Cretaceous, dislocated clastics and created a sediment source area in the northern Richardson Mountains area. This fault system consists of "... vertical faults along which both dextral strike-slip and ... high angle reverse separation occurs." (Young & McNeil, 1982, p. 50). Figure 2 shows the Laramide tectonic elements responsible for uplift, erosion and subsequent deposition of the Upper Cretaceous Tertiary molassic sequences in the Mackenzie Delta area.

# 7.0 STRUCTURAL GEOLOGY OF THE COAL MINE LAKE PROPERTY

## 7.1 General Structure

The structural geology of the Coal Mine Lake property is characterized by a series of broad anticline-syncline pairs whose axes trend northeast. Fold limbs dip gently (10 degrees or less) and the folds plunge at about 10 degrees to the north. In the western part of the property this fold pattern is interrupted by high angle faults which result in steepened bedding dips and, in one area, overturned beds. The disturbed zone culminates in a major north-south trending tear fault which exhibits a rotational, scissor type displacement. This fault places north plunging Moose Channel Formation rocks to the east against south dipping Moose Channel Formation strata to the west. It demonstrates a sinistral displacement of 500 to 600 meters.

## 7.2 Detailed Structure

The Coal Mine Lake property can be divided into two structural blocks: the Big Fish River block and the Aklak Creek block (Figure 8). Most of the coal measures are contained within the Big Fish River block which is bounded on the west by Aklak Creek and on the east by the Big Fish River. The Aklak Creek block encompasses the area west of Aklak Creek.

### 7.2.1 Big Fish River Block

The Big Fish River block is structurally simple and constitutes the area of greatest mining potential on the property. The structure is characterized by northeast trending open folds which plunge gently northward.

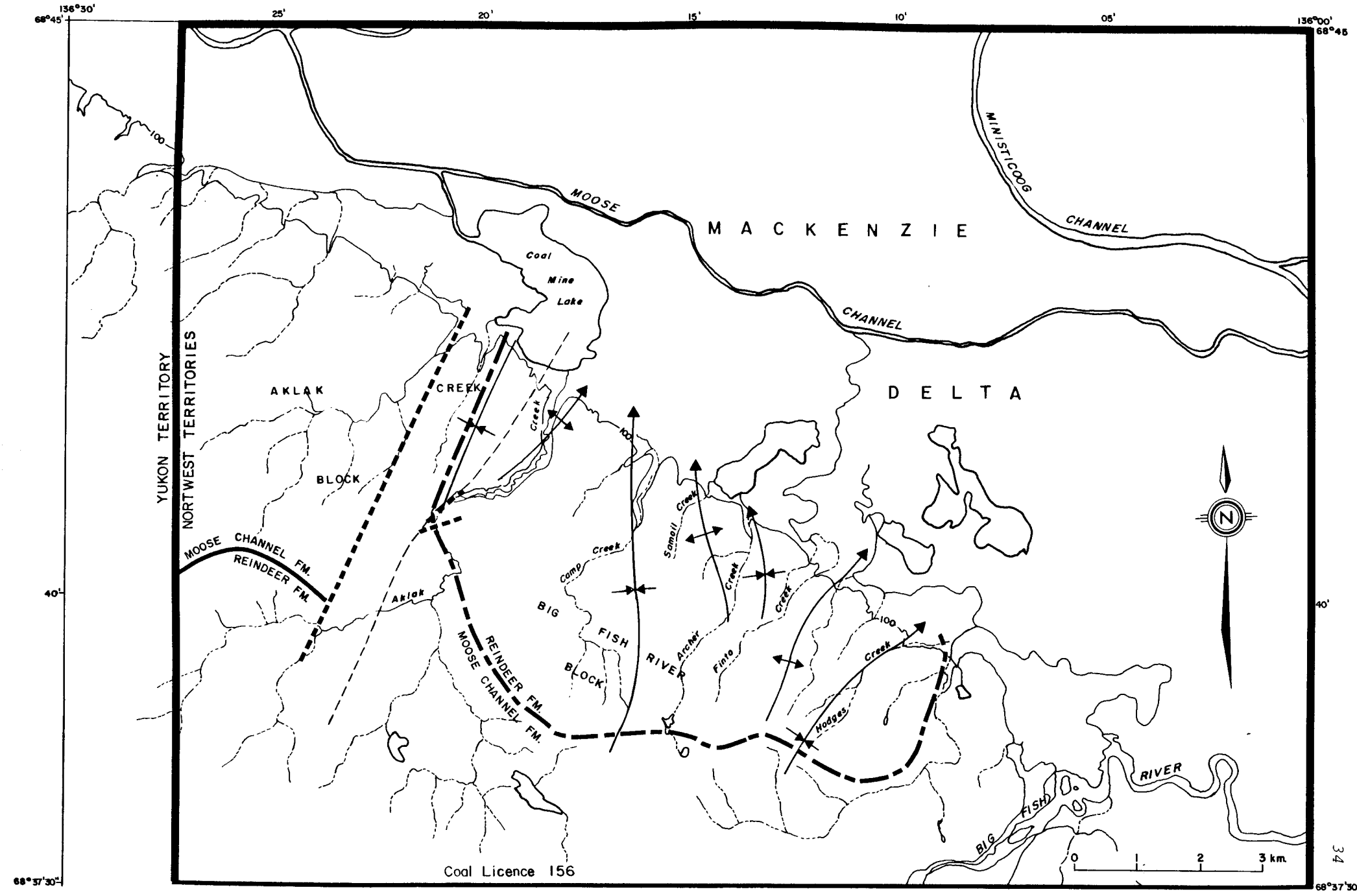



FIGURE 8 STRUCTURAL FEATURES OF THE COAL MINE LAKE PROPERTY

The eastern part of the Big Fish River block extends from the Big Fish River to Archer Creek and is comprised of a broad fold pair plunging to the north-northeast at 10 degrees. The trace of the synclinal axis is roughly parallel to Lightning Creek and the fold limbs dip at 5 to 10 degrees to the northwest and southeast. The trace of the anticlinal axis, at the delta margin, is about 1.3 km northwest of the trace of the synclinal axis. This distance decreases somewhat as the vertical fold axes converge towards the southwest.

The central section of the Big Fish River block consists of a somewhat more tightly folded syncline-anticline pair in the vicinity of Archer Creek. The trace of the synclinal axis is north-south, paralleling the lower reaches of Archer Creek and the anticlinal axis is about 800 m to the west. The syncline's eastern limb and the anticline's western limb both dip at 5 to 10 degrees to the northwest and their common limb dips at 5 to 10 degrees to the northeast. The fold axes converge southward until, 2 km from the delta margin, the fold pair disappears and is replaced by the northwesterly dipping fold limb of a syncline to the west.

The western part of the Big Fish River block is comprised of a pair of broad, north plunging folds. The easternmost fold is a syncline whose north-south trending axial trace is parallel to and just west of the lower Camp Creek valley. It plunges variably from less than 5 to 15 degrees northward. The western limb of the syncline strikes northwest and dips at 5 to 10 degrees to the northeast. The dip of this limb increases locally to 45 degrees in the upper reaches of Aklak Creek. The anticline plunges northward at a maximum of five degrees. Its axial trace is roughly parallel to the lower Aklak Creek valley and its eastern limb dips gently (5 degrees) to the northwest (refer to the Structure Contour map in Appendix C).

The western part of the Big Fish River block is disturbed by three east-west trending normal faults (refer to Map 4, Appendix A). A graben between the middle and southernmost faults exhibits a vertical displacement of 30 to 40 m whereas the block between the middle and northernmost faults has been raised about the same distance relative to the two adjacent blocks (refer to Cross-section A-A', Appendix B). In addition to vertical movement, the northernmost fault exhibits a dextral movement of about 40 m.

### 7.2.2 Aklak Creek Block

The dominant structural feature of the Aklak Creek block is a major fault which trends north-south about 2 km west of the mouth of Aklak Creek. This fault appears to have had a rotational movement which separates north plunging Moose Channel Formation strata to the east from south dipping Moose Channel Formation rocks to the west. Correlation of sediments on both sides of the fault indicates a sinistral displacement of about 500 to 600 meters.

Strata east of the major fault zone are folded into an asymmetric syncline whose axis trends northeast. The western limb dips at 85 degrees to the east at the delta margin and is overturned where exposed in the southeastern part of the Aklak Creek block (refer to Maps 2 and 4, Appendix A and to the Structure Contour map in Appendix C). This fold is thought to be associated with either the normal, block faulting previously described or with high angle, reverse faulting originating in the Rapid Fault Array southwest of the property (refer to Section 6.0).

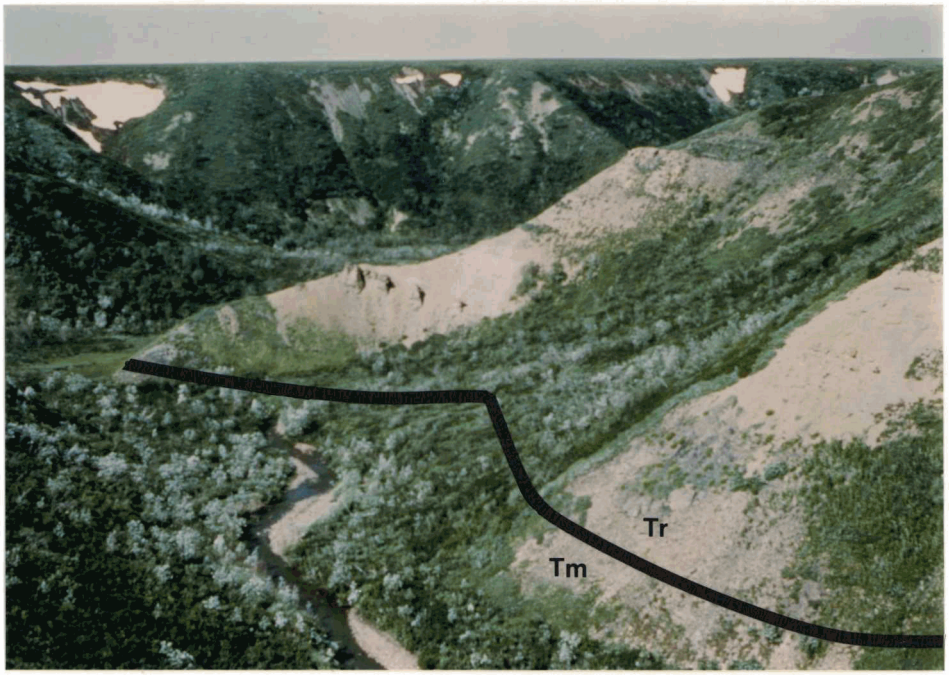



PLATE 11 Aklak Member, Aklak Creek showing Moose Channel Formation - Reindeer Formation contact

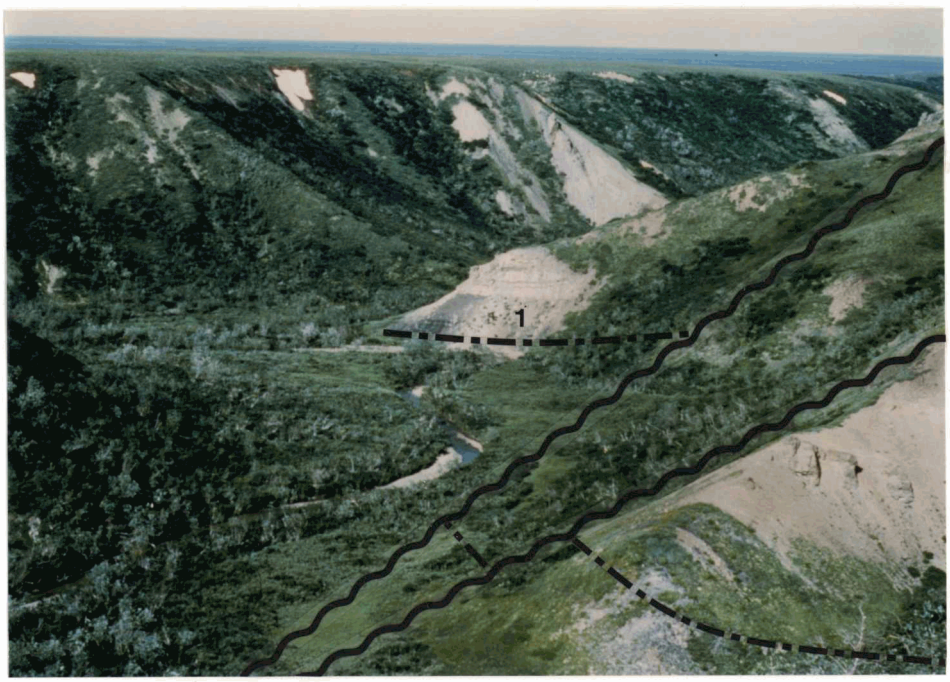



PLATE 12 Aklak Member, Aklak Creek showing faulted area

The relatively steep dips of beds exposed in the upper reaches of Aklak Creek may also have resulted from movement along southwest dipping reverse faults.

The Moose Channel Formation sediments underlying the western-most portion of the property dip from 15 to 30 degrees to the south. The Moose Channel Formation - Reindeer Formation contact is not exposed but probably subcrops in the south-western portion of this area (Figure 8).

# 8.0 COAL QUALITY

The coals of the Aklak Member of the Reindeer Formation in the vicinity of Coal Mine Lake are high volatile bituminous C to sub-bituminous A in rank.

## 8.1 Coal Sample Analyses

Twenty-one trenches were excavated to log and sample the coal seams of the Aklak Member. Coal samples from these trenches were shipped to the laboratory and twenty-four composites were analyzed. Proximate and reflectance analyses were performed on composites representing ten of the thirteen recognized coal seams. It should be noted that the analyses were performed on oxidized coal. The laboratory results are tabulated in Tables 7 and 8 and summarized in Tables 5 and 6.




PLATE 13 Seam 8 exposure at T-1 in Camp Creek. Coal is more resistant to erosion than poorly consolidated rock




PLATE 14 Seam 2 exposure at T-16 in Finto Creek. Note resistance of coal to erosion

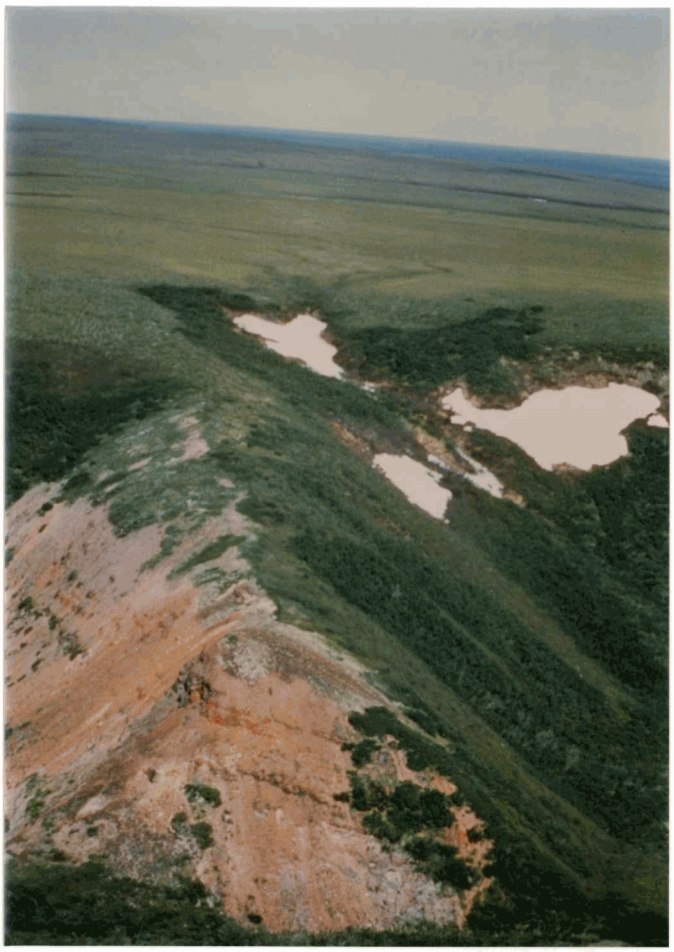


PLATE 15 Sandstone, siltstone, claystone bocanne in Aklak Creek



PLATE 16 Overturned conglomerate exposed in Aklak Creek
Tops are to the right

TABLE 5

RANGES OF COAL QUALITY VALUES

Air Dried Basis

| | |
|---|---|
| Moisture | 3.69 to 10.80 % |
| Volatile Matter | 23.58 to 40.23 % |
| Ash | 3.72 to 46.50 % |
| Fixed Carbon | 50.00 to 25.55 % |
| Sulphur | 0.14 to 2.35 % |
| Specific Energy | 28.32 to 13.01 MJ/kg |
| Reflectance | 0.51 to 0.64 % $\bar{R}o$ (max) |

Dry Basis

| | |
|---|---|
| Volatile Matter | 24.66 to 42.82 % |
| Ash | 3.96 to 48.62 % |
| Fixed Carbon | 53.47 to 26.72 % |
| Sulphur | 0.15 to 2.51 % |
| Specific Energy | 30.15 to 13.76 MJ/kg |

TABLE 6

COAL QUALITY PARAMETER VARIATIONS

Air Dried Basis

| | Minimum | Seam/Trench | | Maximum | Seam/Trench | |
|---|---|---|---|---|---|---|
| Moisture (%) | 3.69 | 9 | T-15 | 10.80 | 4 | T-10 |
| Volatile Matter (%) | 23.58 | 3U | T-17A | 40.23 | 8 | T-1 |
| Ash (%) | 3.72 | 8 | T-1 | 46.50 | 3U | T-17A |
| Fixed Carbon (%) | 25.55 | 3U | T-17A | 50.00 | 8 | T-1 |
| Sulphur (%) | 0.14 | 8 | T-1 | 2.35 | 3L | T-17C |
| Specific Energy (MJ/kg) | 13.01 | 1L | T-3 | 28.32 | 8 | T-1 |
| Reflectance % $\overline{Ro}$ (max) | 0.51 | 4 | T-10 | 0.64 | 1L | T-14B |

Dry Basis

| | | | | | | |
|---|---|---|---|---|---|---|
| Volatile Matter (%) | 24.66 | 3U | T-17A | 42.82 | 8 | T-1 |
| Ash (%) | 3.96 | 8 | T-1 | 48.62 | 3U | T-17A |
| Fixed Carbon (%) | 26.72 | 3U | T-17A | 53.47 | 8 | T-18 |
| Sulphur (%) | 0.15 | 8 | T-1 | 2.51 | 3L | T-17C |
| Specific Energy (MJ/kg) | 13.76 | 3U | T-17A | 30.15 | 8 | T-1 |

TABLE 7

COAL MINE LAKE COAL QUALITY DATA (AS RECEIVED BASIS)

| SEAM | TRENCH | H20(%) | VM(%) | ASH(%) | FC(%) | S(%) | SE(MJ/kg) | SG(g/cc) | $\bar{R}$omax |
|---|---|---|---|---|---|---|---|---|---|
| 1U | 3 | 18.59 | 24.48 | 33.99 | 22.94 | .29 | 11.57 | 1.68 | .57 |
| 1U | 14 | 15.07 | 26.07 | 21.99 | 36.87 | .70 | 18.77 | 1.47 | .61 |
| 1L | 14 | 15.65 | 22.88 | 29.89 | 31.58 | .41 | 16.28 | 1.57 | .64 |
| 1U | 8 | 11.07 | 29.29 | 27.71 | 31.93 | .67 | 18.41 | 1.53 | .57 |
| 1L | 8 | 14.15 | 28.87 | 15.74 | 41.24 | .39 | 21.02 | 1.45 | .61 |
| 2U | 4 | 17.71 | 25.44 | 32.78 | 24.07 | .40 | 12.86 | 1.63 | .56 |
| 2L | 4 | 15.72 | 25.37 | 28.50 | 30.41 | .27 | 15.31 | 1.53 | .56 |
| 2L | 5 | 18.18 | 24.24 | 31.60 | 25.98 | .24 | 13.11 | 1.61 | .55 |
| 2U | 11 | 18.13 | 26.29 | 23.60 | 31.98 | 1.02 | 15.91 | 1.51 | .59 |
| 2 | 16 | 12.85 | 33.40 | 12.25 | 41.50 | .26 | 23.25 | 1.39 | .60 |
| 3U | 17 | 13.62 | 21.30 | 42.00 | 23.08 | .18 | 11.89 | 1.71 | .56 |
| 3M | 17 | 16.86 | 29.36 | 14.04 | 39.74 | .64 | 19.57 | 1.42 | .59 |
| 3L | 17 | 11.51 | 30.34 | 19.08 | 39.07 | 2.22 | 21.02 | 1.44 | .55 |
| 4 | 7 | 19.90 | 28.99 | 16.54 | 34.57 | 1.08 | 16.97 | 1.46 | .54 |
| 4 | 10 | 24.18 | 32.17 | 11.24 | 32.41 | .13 | 16.27 | 1.40 | .51 |
| 5 | 6 | 20.52 | 24.66 | 28.05 | 26.77 | .25 | 13.04 | 1.56 | .53 |
| 8 | 1 | 12.43 | 37.50 | 3.47 | 46.60 | .13 | 26.40 | 1.31 | .55 |
| 8 | 18 | 14.54 | 35.33 | 4.43 | 45.70 | .17 | 25.09 | 1.32 | .54 |
| 9 | 2 | 13.93 | 36.47 | 5.32 | 44.28 | .28 | 25.35 | 1.32 | .56 |
| 9 | 15 | 15.86 | 29.19 | 20.02 | 34.93 | .98 | 19.23 | 1.43 | .57 |
| 9 | 13 | 12.90 | 28.15 | 26.28 | 32.67 | .17 | 18.33 | 1.49 | .55 |
| 11 | 21 | 16.72 | 29.81 | 18.85 | 34.62 | .17 | 19.55 | 1.43 | .53 |
| 12 | 20 | 15.93 | 26.47 | 31.61 | 25.99 | .17 | 14.34 | 1.60 | .53 |
| 13 | 12 | 20.97 | 28.18 | 18.88 | 31.97 | .17 | 17.21 | 1.46 | .54 |

COAL MINE LAKE COAL QUALITY DATA (AIR DRIED BASIS)

| SEAM | TRENCH | H20(%) | VM(%) | ASH(%) | FC(%) | S(%) | SE(MJ/kg) |
|---|---|---|---|---|---|---|---|
| 1U | 3 | 8.46 | 27.53 | 38.22 | 25.79 | .33 | 13.01 |
| 1U | 14 | 4.63 | 29.27 | 24.69 | 41.41 | .78 | 21.07 |
| 1L | 14 | 3.95 | 26.06 | 34.04 | 35.95 | .47 | 18.53 |
| 1U | 8 | 4.70 | 31.39 | 29.70 | 34.21 | .71 | 19.73 |
| 1L | 8 | 4.40 | 32.15 | 17.53 | 45.92 | .43 | 23.40 |
| 2U | 4 | 9.05 | 28.11 | 36.23 | 26.61 | .45 | 14.21 |
| 2L | 4 | 8.81 | 27.45 | 30.84 | 32.90 | .29 | 16.57 |
| 2L | 5 | 8.46 | 27.12 | 35.35 | 29.07 | .27 | 14.67 |
| 2U | 11 | 4.60 | 30.63 | 27.50 | 37.27 | 1.19 | 18.53 |
| 2 | 16 | 4.36 | 36.66 | 13.45 | 45.53 | .29 | 25.52 |
| 3U | 17 | 4.37 | 23.58 | 46.50 | 25.55 | .20 | 13.16 |
| 3M | 17 | 5.98 | 33.20 | 15.88 | 44.94 | .72 | 22.13 |
| 3L | 17 | 6.48 | 32.07 | 20.16 | 41.29 | 2.35 | 22.22 |
| 4 | 7 | 7.62 | 33.43 | 19.08 | 39.87 | 1.25 | 19.58 |
| 4 | 10 | 10.80 | 37.85 | 13.23 | 38.12 | .15 | 19.14 |
| 5 | 6 | 9.83 | 27.98 | 31.82 | 30.37 | .29 | 14.80 |
| 8 | 1 | 6.05 | 40.23 | 3.72 | 50.00 | .14 | 28.32 |
| 8 | 18 | 8.55 | 37.81 | 4.74 | 48.90 | .18 | 26.85 |
| 9 | 2 | 5.73 | 39.94 | 5.83 | 48.50 | .31 | 27.77 |
| 9 | 15 | 3.69 | 33.41 | 22.91 | 39.99 | 1.13 | 22.01 |
| 9 | 13 | 4.89 | 30.74 | 28.69 | 35.68 | .19 | 20.02 |
| 11 | 21 | 5.90 | 33.69 | 21.30 | 39.11 | .19 | 22.09 |
| 12 | 20 | 7.72 | 29.06 | 34.70 | 28.52 | .18 | 15.74 |
| 13 | 12 | 6.44 | 33.36 | 22.35 | 37.85 | .21 | 20.37 |

TABLE 8

COAL MINE LAKE COAL QUALITY DATA (DRY BASIS)

| SEAM | TRENCH | VM(%) | ASH(%) | FC(%) | S(%) | SE(MJ/kg) |
|---|---|---|---|---|---|---|
| 1U | 3 | 30.07 | 41.75 | 28.18 | .36 | 14.21 |
| 1U | 14 | 30.69 | 25.89 | 43.42 | .82 | 22.09 |
| 1L | 14 | 27.13 | 35.44 | 37.43 | .49 | 19.30 |
| 1U | 8 | 32.94 | 31.16 | 35.90 | .75 | 20.70 |
| 1L | 8 | 33.63 | 18.34 | 48.03 | .45 | 24.48 |
| 2U | 4 | 30.91 | 39.84 | 29.25 | .49 | 15.62 |
| 2L | 4 | 30.10 | 33.82 | 36.08 | .32 | 18.17 |
| 2L | 5 | 29.63 | 38.62 | 31.75 | .29 | 16.03 |
| 2U | 11 | 32.11 | 28.83 | 39.06 | 1.25 | 19.43 |
| 2 | 16 | 38.33 | 14.06 | 47.61 | .30 | 26.68 |
| 3U | 17 | 24.66 | 48.62 | 26.72 | .21 | 13.76 |
| 3M | 17 | 35.31 | 16.89 | 47.80 | .77 | 23.54 |
| 3L | 17 | 34.29 | 21.56 | 44.15 | 2.51 | 23.76 |
| 4 | 7 | 36.19 | 20.65 | 43.16 | 1.35 | 21.19 |
| 4 | 10 | 42.43 | 14.83 | 42.74 | .17 | 21.46 |
| 5 | 6 | 31.03 | 35.29 | 33.68 | .32 | 16.41 |
| 8 | 1 | 42.82 | 3.96 | 53.22 | .15 | 30.15 |
| 8 | 18 | 41.34 | 5.18 | 53.47 | .20 | 29.36 |
| 9 | 2 | 42.37 | 6.18 | 51.45 | .33 | 29.45 |
| 9 | 15 | 34.69 | 23.79 | 41.52 | 1.17 | 22.86 |
| 9 | 13 | 32.32 | 30.17 | 37.51 | .20 | 21.04 |
| 11 | 21 | 35.80 | 22.64 | 41.56 | .20 | 23.48 |
| 12 | 20 | 31.49 | 37.60 | 30.91 | .20 | 17.06 |
| 13 | 12 | 35.66 | 23.89 | 40.45 | .22 | 21.78 |

# 9.0 RESOURCE POTENTIAL OF THE COAL MINE LAKE PROPERTY

The total inferred in-situ resources of the Coal Mine Lake Property are 517 million tonnes.

## 9.1 Resource Calculation

Seams 2 through 5 and 8 through 13 were included in the resource calculation. Seam 1 was excluded because it is stratigraphically separated from the other seams by 50 m of interburden and Seams 6 and 7 were excluded because of the paucity of information regarding their location, thickness and quality.

The resource potential of the Coal Mine Lake property has been calculated using the cross-section method (refer to Cross-sections in Appendix B). Seam lengths were measured in each section and these values were multiplied by the respective seam thicknesses. These products were then multiplied by the section influence length and the respective specific gravities (arithmetic averages of laboratory determinations from trench sample composites) and the resultant products were totalled to give the mass of coal represented by each cross-section. The coal mass values for the cross-sections were totalled to give a resource value for the property. The formula used for this calculation is given below:

$$\text{Total mass, } Mc = \sum_{j=A}^{E} \left( \sum_{i=A}^{13} (T_i L_i SG_i) \right) \times SI_j \qquad (1)$$

where

T = seam thickness
L = length of seam in section
SG = specific gravity of seam
SI = cross-section influence length
i = seam number (2 to 13 excluding 6 and 7)
j = cross-section (A-A' to E-E')

# 10.0 MINING POTENTIAL OF THE COAL MINE LAKE PROPERTY

Two potential mining scenarios are envisioned in which a multi-seam surface mining operation would take place on the Coal Mine Lake property. The first includes Seams 8 through 13 and the second includes Seam 2 through 13. The coal potential of the 6-7 seam zone is unknown (refer to Section 9.1) and resource contributions from this zone were not included in the following calculations.

## 10.1 Average Strip Ratio

Average strip ratios for the Seam 8-13 and Seam 2-13 zones were calculated for the property using the coal mass values determined in Section 9.1. The bases of Seams 2 and 8 were used as pit footwalls and the northeast ends of the cross-sections (refer to Geologic Maps and Cross-sections in Appendices A and B) were used as vertical highwalls. The average strip ratio for the Seam 8 to Seam 13 section is 3.8 $bm^3/t$ (in situ) and for the Seam 2 to Seam 13 section is 2.5 $bm^3/t$ (in situ).

## 10.2 Strip Ratio Calculations

The following formulae were used to calculate the strip ratios:
For each cross-section influence area ...

$$\text{Coal volume, } Vc = \left(\sum_{i=2(8)}^{13} L_i \times T_i\right) \times SI \qquad (2)$$

where
- L = seam length in section
- T = seam thickness
- SI = length of section influence
- i = seam

$$\text{Rock volume, } Vr = Vt - Vc \qquad (3)$$

where Vt = volume of rock plus coal within section influence area (determined from cross-section measurements)

$$\text{Coal mass, } Mc = \sum_{i=2(8)}^{13} (Vc_i \times SG_i)$$

where $Vc_i$ = coal volume of seam

$SG_i$ = specific gravity of seam

Strip ratio, SR = Vr/Mc

The weighted average strip ratio for the property was determined using cross-section influence as the weighting factor:

$$\text{Averate Strip Ratio} = \frac{\sum_{j=A}^{E} (SR_j \times SI_j)}{\sum_{j=A}^{E} SI_j} \qquad (6)$$

where J = cross-section (A-A' to E-E')



PLATE 17 Abandoned minesite on Aklak Creek. Coal Mine Lake is in background



PLATE 18 Abandoned minesite on Coal Mine Lake west of Aklak Creek

## 11.0 CONCLUSION

The Coal Mine Lake property is underlain by several hundred million tonnes of high quality thermal coal. Over 500 million in-situ tonnes have been inferred in the central and eastern portions of the property and the southwestern area, west of Aklak Creek, may contain additional resources. Geologic structure over most of the property is simple and gentle bedding dips suggest surface mining potential with average in-situ strip ratios of less than four bank cubic meters per tonne. The high specific energy values and low ash and sulphur values of this coal indicate its suitability for thermal power generation. Coal production from Coal Mine Lake must, however, be considered a long term proposition due to its remote location, lack of infrastructure and current poor market conditions.

## 12.0 RECOMMENDATIONS

a. The current resource evaluation of the Coal Mine Lake property is based exclusively on outcrop and trench information. Most of the property, however, is covered by tundra and a drilling program is recommended to verify geologic continuity between outcrop areas. Twenty diamond drill holes have been proposed to provide supplemental structural, stratigraphic and coal quality information and to test the current geological model. One or two heli-portable rigs capable of producing NQ drill core are recommended.

A drilling program would be mobilized from Inuvik and equipment would be transported by barge in early summer or cat train in winter to the property. The program would probably extend from late June to mid- or late September and would operate from a base camp located on the property.

A helicopter (Bell 206B or Hughes 500D) would be based at the field camp to provide access to drillsites and to move the rigs.

b. More than half of coal licence 156 (14,967 hectares) covers the delta lowlands and it is recommended that this part be dropped. All of the remaining 10,661 hectares should be retained pending drilling after which portions covering the Moose Channel Formation could be dropped (refer to Figure 8).

## 13.0 REFERENCES

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# APPENDIX A

# GEOLOGIC MAPS

136° 21' 136° 20' 136° 19' 136° 18' 17' 136° 16' 136° 15'

445 000 E 445 500 E 446 000 E 446 500 E 447 000 E 447 500 E 448 000 E 448 500 E 449 000 E 449 500 E 450 000 E

7 625 500 N 7 625 000 N 7 624 500 N 7 624 000 N 7 623 500 N 7 623 000 N 7 622 500 N 7 622 000 N 7 621 500 N

MOOSE CHANNEL FORMATION

Basal Sandstone Member (Tmcb)

Basal Sandstone Member (Tmcb)

Ministicoog Member (Tmcm)

MOOSE CHANNEL FORMATION

(Tra)

Hanson's Mine

W.L. 2.1

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## LEGEND

MAIN ROAD
SECONDARY ROAD
TRACK OR TRAIL
RAILWAY
HEDGE FENCE
BRIDGE CULVERT
SWAMP
UTILITY POLE
RIVER, LAKE
INTERMITTENT RIVER
TREED AREA
INDIVIDUAL TREE
SPOT HEIGHT
CONTOURS
DEPRESSION
CONTROL

## GEOLOGICAL LEGEND

REINDEER FORMATION, Akiak Member . . . . . (Tra)
MOOSE CHANNEL FORMATION, Ministicoog Member . . . . . (Tmcm)
MOOSE CHANNEL FORMATION, Basal Sandstone Member . . . . (Tmcb)
GEOLOGICAL BOUNDARY (approximate, assumed) . . . . .
COAL SEAM TRACE (approximate) . . . . . 8
BEDDING, TOPS KNOWN . . . . . (horizontal, inclined, vertical, overturned)
BEDDING, TOPS UNKNOWN . . . . . 55
BOCANNE . . . . . 2000
FAULT (approximate assumed · solid circle indicates downthrown side) . . . . .
SYNCLINE (approximate) . . . . . .
ANTICLINE (approximate) . . . . . .
MINE (abandoned) . . . . . .
PROPOSED DRILL HOLE (number denotes priority) . . . . . 5

SCALE 1:5000

100 0 100 200 300 400 500 METRES
500 0 500 1000 1500 FEET

CONTOUR INTERVAL 5 METRE

DATE OF PHOTO JULY 1982

INDEX MAP

| | | |
|---|---|---|
| 1 | 2 | |
| 3 | 4 | 5 |
| 6 | 7 | 8 |

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# COAL MINE LAKE PROJECT

# GEOLOGY MAP 2

MOOSE CHANNEL FORMATION

Basal Sandstone Member (Tmcb)

Ministicoog Member (Tmcm)

MOOSE CHANNEL FORMATION

Ministicoog Member (Tmcm)

REINDEER FORMATION

Aklak Member (Tra)

MOOSE CHANNEL FORMATION

NORTH WEST SURVEY CORPORATION INTERNATIONAL LTD

## LEGEND

MAIN ROAD
SECONDARY ROAD
TRACK OR TRAIL
RAILWAY
HEDGE FENCE
BRIDGE CULVERT
SWAMP
UTILITY POLE
RIVER, LAKE
INTERMITTENT RIVER
TREED AREA
INDIVIDUAL TREE
SPOT HEIGHT
CONTOURS
DEPRESSION
CONTROL

## GEOLOGICAL LEGEND

REINDEER FORMATION, Aklak Member . . . . . (Tra)
MOOSE CHANNEL FORMATION, Ministicoog Member . . . . . (Tmcm)
MOOSE CHANNEL FORMATION, Basal Sandstone Member . . . (Tmcb)
GEOLOGICAL BOUNDARY (approximate, assumed) . . . .
COAL SEAM TRACE (approximate) . . . . . 8
BEDDING, TOPS KNOWN (horizontal, inclined, vertical, overturned)
BEDDING, TOPS UNKNOWN . . . . . 55
BIOCANNE . . . . . BIOCANNE
FAULT (approximate, assumed; solid circle indicates downthrown side) . . . . .
SYNCLINE (approximate) . . . . . .
ANTICLINE (approximate) . . . . . .
PROPOSED DRILL HOLE (number denotes priority) . . . . ⊙5

SCALE 1:5000

100 0 100 200 300 400 500 METRES
500 0 500 1000 1500 FEET

CONTOUR INTERVAL 5 METRE

DATE OF PHOTO JULY 1982

INDEX MAP

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|---|---|---|
| 1 | 2 | |
| 3 | 4 | 5 |
| 6 | 7 | 8 |

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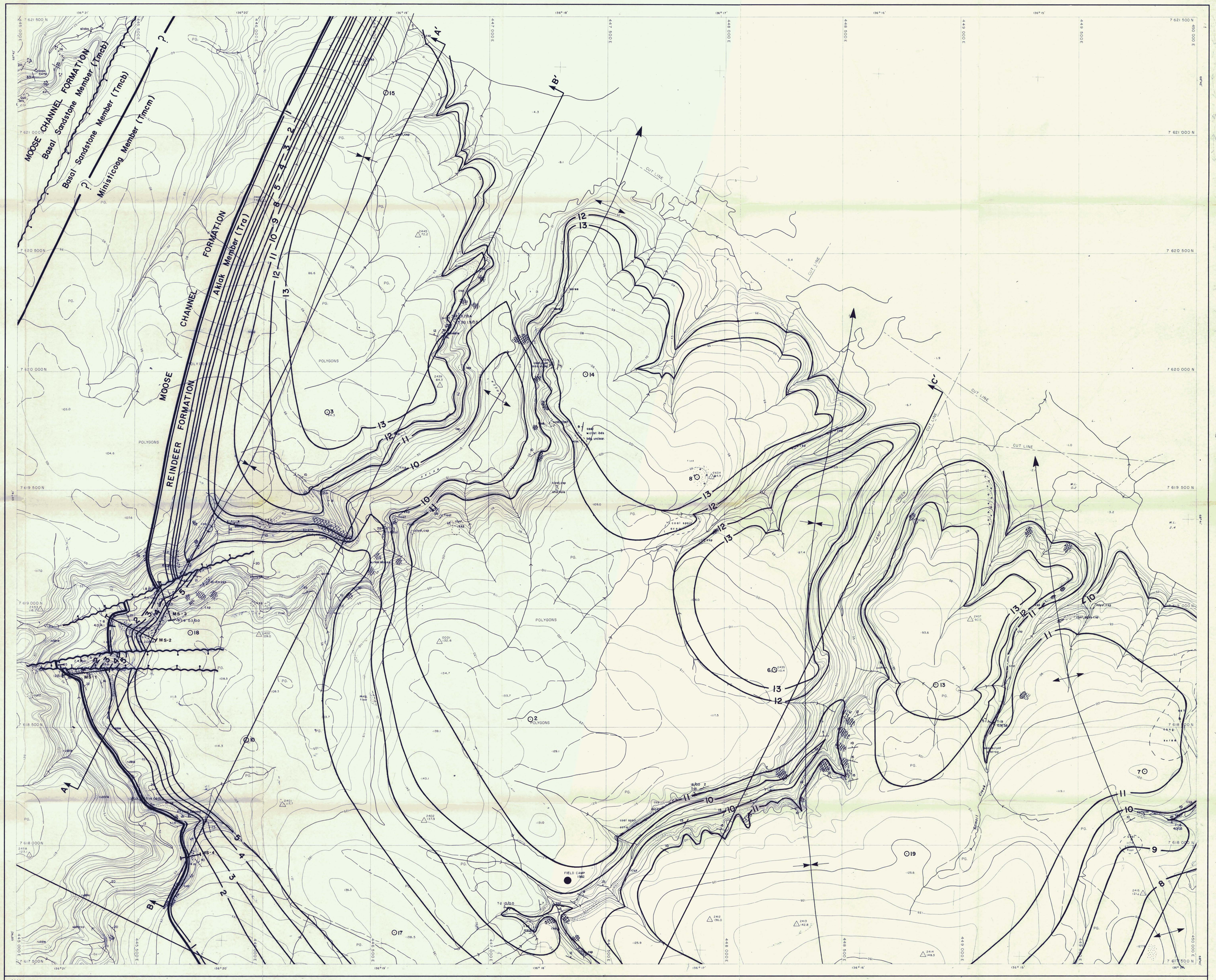
# COAL MINE LAKE PROJECT

# GEOLOGY MAP 3

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## LEGEND

| | | | |
|---|---|---|---|
| MAIN ROAD | | RIVER, LAKE | |
| SECONDARY ROAD | | INTERMITTENT RIVER | |
| TRACK OR TRAIL | | TREED AREA | |
| RAILWAY | | INDIVIDUAL TREE | |
| HEDGE FENCE | | SPOT HEIGHT | 900.1 |
| BRIDGE CULVERT | | CONTOURS | 900 |
| SWAMP | | DEPRESSION | 650 |
| UTILITY POLE | | CONTROL | |

## GEOLOGICAL LEGEND

| | |
|---|---|
| REINDEER FORMATION, Aklak Member | (Tra) |
| MOOSE CHANNEL FORMATION, Ministicoog Member | (Tmcm) |
| MOOSE CHANNEL FORMATION, Basal Sandstone Member | (Tmcb) |
| GEOLOGICAL BOUNDARY (approximate, assumed) | |
| COAL SEAM TRACE (approximate) | 8 |
| BEDDING, TOPS KNOWN (horizontal, inclined, vertical, overturned) | 10 65 |
| BEDDING, TOPS UNKNOWN | 55 |
| BOCANNE | |
| FAULT (approximate, assumed; solid circle indicates downthrown side) | |
| SYNCLINE (approximate) | |
| ANTICLINE (approximate) | |
| MINE (abandoned) | |
| PROPOSED DRILL HOLE (number denotes priority) | 5 |
| MEASURED SECTION | MS-2 |

SCALE 1:5000

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500 0 500 1000 1500 FEET

CONTOUR INTERVAL 5 METRE

DATE OF PHOTO JULY 1982

INDEX MAP

| | | |
|---|---|---|
| 1 | 2 | |
| 3 | 4 | 5 |
| 6 | 7 | 8 |

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|---|---|
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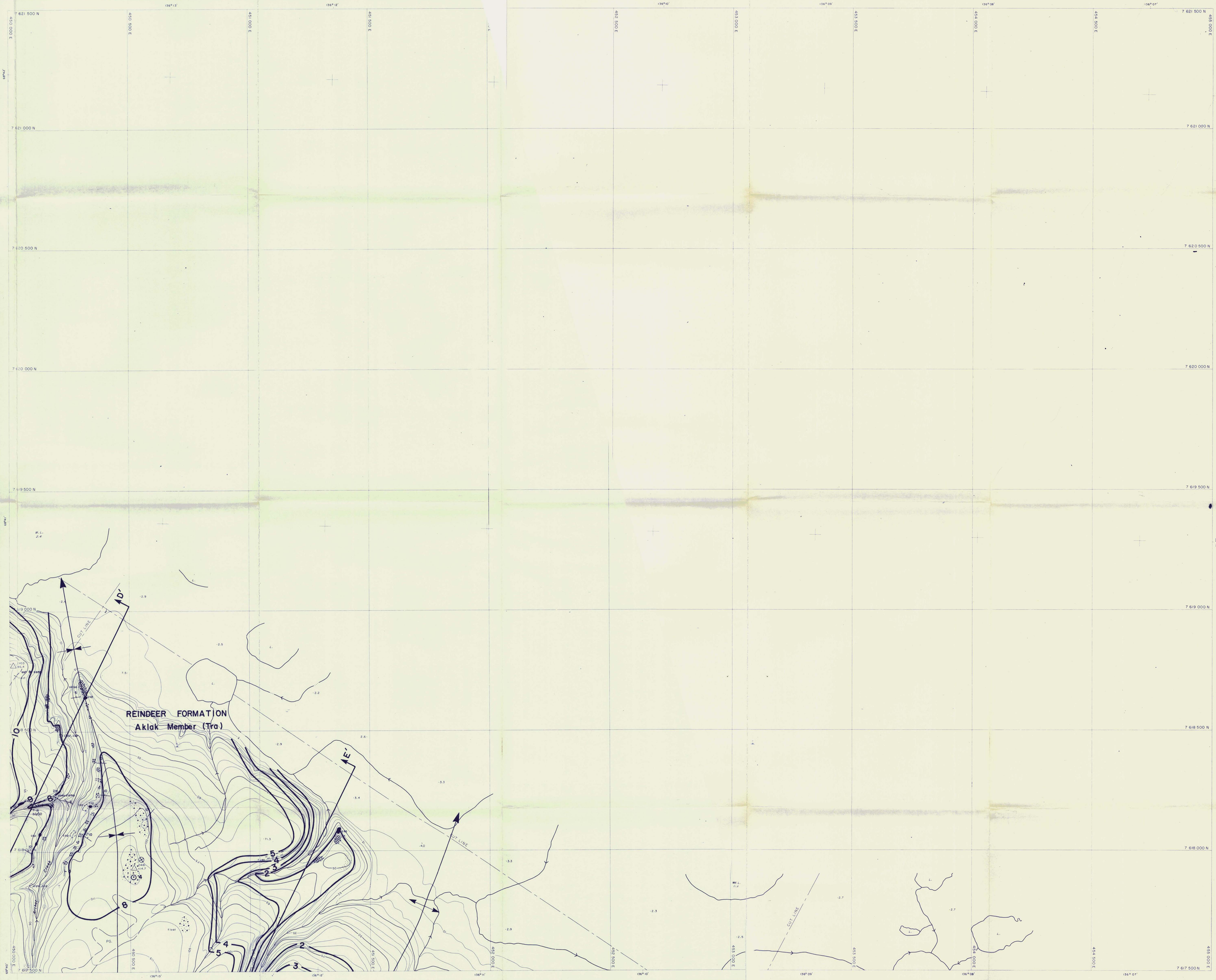
# GEOLOGY MAP 4

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## LEGEND

- MAIN ROAD
- SECONDARY ROAD
- TRACK OR TRAIL
- RAILWAY
- HEDGE FENCE
- BRIDGE CULVERT
- SWAMP
- UTILITY POLE
- RIVER, LAKE
- INTERMITTENT RIVER
- TREED AREA
- INDIVIDUAL TREE
- SPOT HEIGHT
- CONTOURS
- DEPRESSION CONTROL

## GEOLOGICAL LEGEND

- REINDEER FORMATION, Aklak Member . . . . . (Tra)
- MOOSE CHANNEL FORMATION, Ministicoog Member . . . . (Tmcm)
- MOOSE CHANNEL FORMATION, Basal Sandstone Member . . . (Tmcb)
- GEOLOGICAL BOUNDARY (approximate, assumed) . . . . . ? ?
- COAL SEAM TRACE (approximate) . . . . . 8
- BEDDING, TOPS KNOWN . . . . . (horizontal, inclined, vertical, overturned)
- BEDDING, TOPS UNKNOWN . . . . . 55
- BOGANNE . . . . . bog
- FAULT (approximate, assumed : solid circle indicates downthrown side) . . . . . ? ?
- SYNCLINE (approximate) . . . . . 5
- ANTICLINE (approximate) . . . . . 5
- PROPOSED DRILL HOLE (number denotes priority) . . . . . 5

SCALE 1:5000

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500 0 500 1000 1500 FEET

CONTOUR INTERVAL 5 METRE

DATE OF PHOTO JULY 1982

INDEX MAP

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| 1 | 2 | |
| 3 | 4 | 5 |
| 6 | 7 | 8 |

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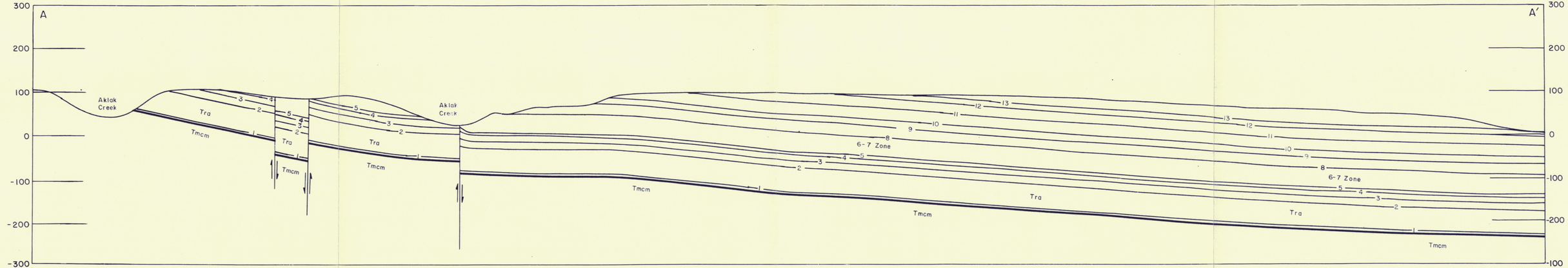
# COAL MINE LAKE PROJECT

# GEOLOGY MAP 5

[See 062162b for Geology Maps 6-8]

# APPENDIX B

## CROSS-SECTIONS




SCALE

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METRES

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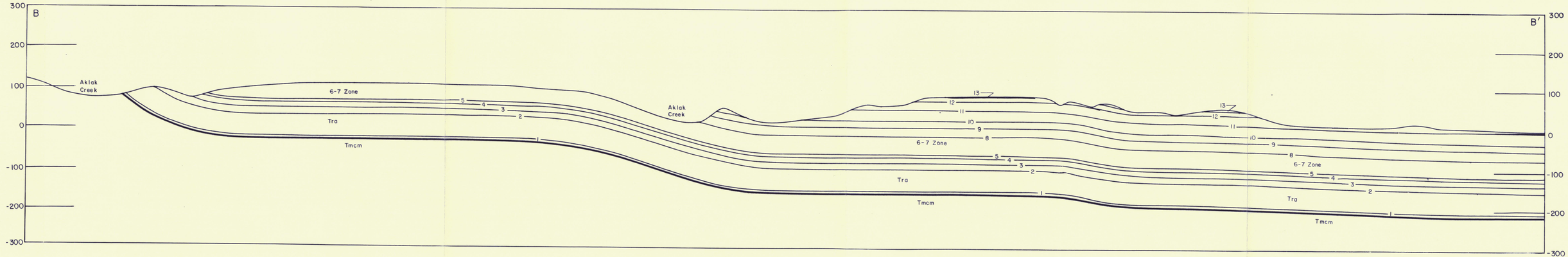
# CROSS-SECTION A-A'




SCALE
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METRES

PETRO-CANADA
COAL DIVISION

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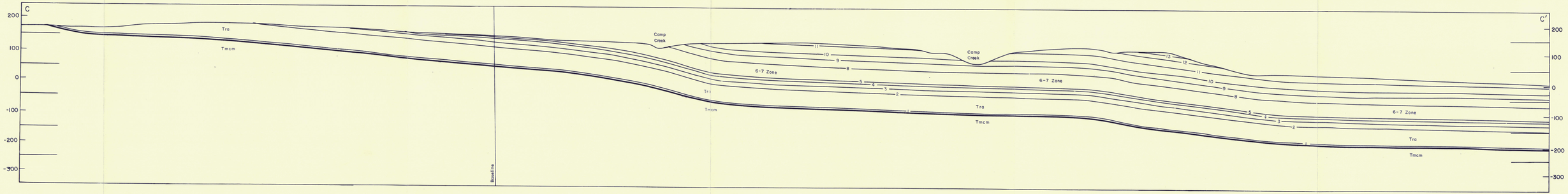
# CROSS – SECTION B-B'




SCALE
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METRES

PETRO-CANADA
COAL DIVISION

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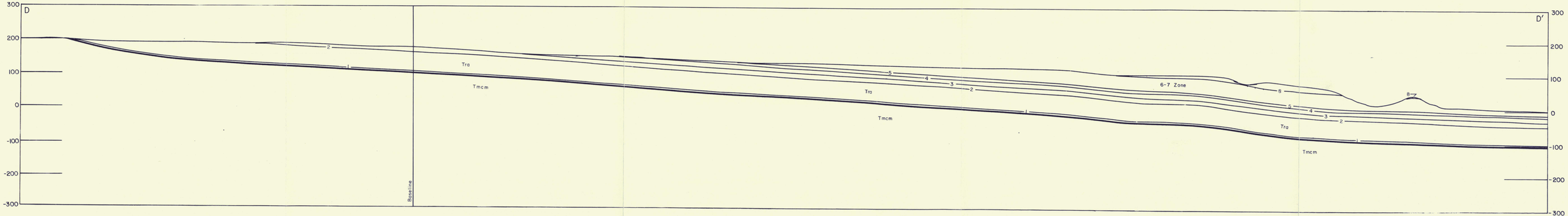
COAL MINE LAKE PROJECT

# CROSS-SECTION C-C'




SCALE
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METRES

PETRO-CANADA
COAL DIVISION

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|---|---|
| DATE | MAY, 1983 |
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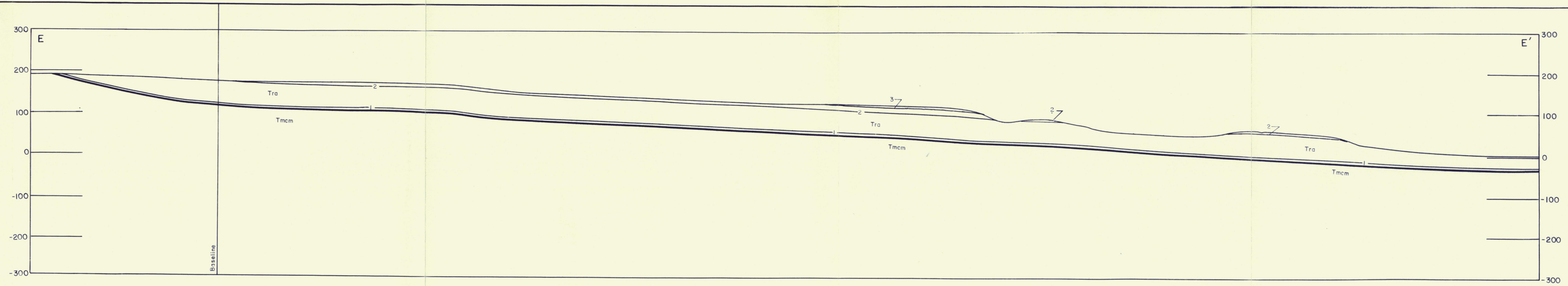
COAL MINE LAKE PROJECT

# CROSS-SECTION D-D'



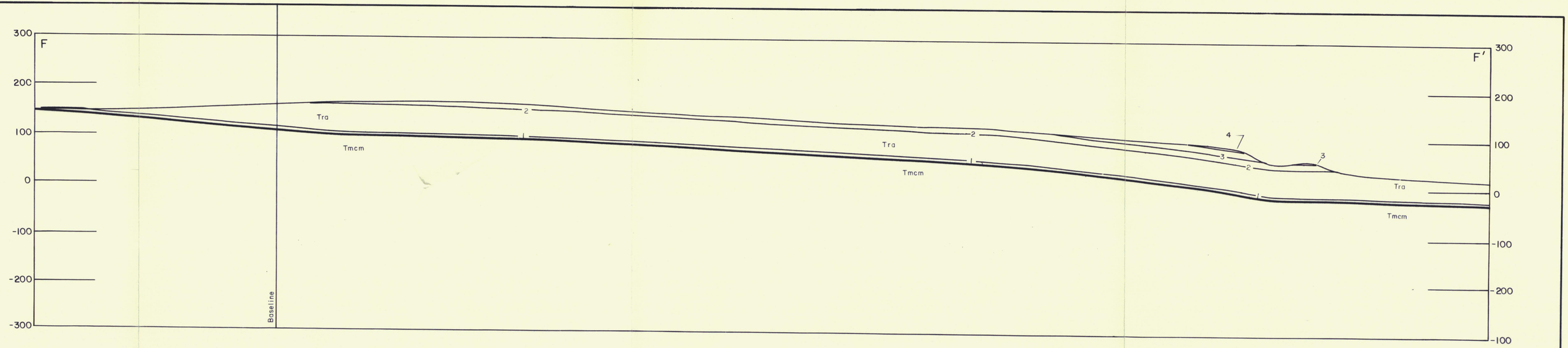

SCALE
0 100 200 300 400 500
METRES

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | MAY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | R.L.P. |
| SCALE | 1:5000 |

COAL MINE LAKE PROJECT

# CROSS-SECTION E-E'




SCALE

0 100 200 300 400 500

METRES

PETRO-CANADA

COAL DIVISION

| | |
|---|---|
| DATE | MAY, 1983 |
| REVISED | |
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| DRAFTED | R. L. P. |
| SCALE | 1:5000 |

COAL MINE LAKE PROJECT

# CROSS-SECTION F-F'

# APPENDIX C

STRUCTURE CONTOUR MAP OF THE BASE OF SEAM 3

A′
B′
C′
D′
A
B
C
D
-75
-50
-25
0
25
50
75
100
125
SEAM TRACE OF SEAM 8
TRACE OF SEAM 8
7,691,000 N
7,690,000 N
7,689,000 N
7,688,000 N
7,687,000 N
445,000 E
446,000 E
447,000 E
448,000 E
449,000 E
450,000 E

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
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| SCALE | 1:5000 |

COAL MINE LAKE PROJECT

# STRUCTURE CONTOUR MAP OF THE BASE OF SEAM 8

CONTOUR INTERVAL = 25m

(Tra) Aklak Member

REINDEER FORMATION

MOOSE CHANNEL Member (Tmcm)

Ministicoog ? ?

Basal Sandstone Member

FORMATION (Tmcb)

POLYGONS

slumped

rubble

PG.

NORTH WEST SURVEY CORPORATION INTERNATIONAL LTD.

## LEGEND

MAIN ROAD
SECONDARY ROAD
TRACK OR TRAIL
RAILWAY
HEDGE FENCE
BRIDGE CULVERT
SWAMP
UTILITY POLE
RIVER, LAKE
INTERMITTENT RIVER
TREED AREA
INDIVIDUAL TREE
SPOT HEIGHT
CONTOURS
DEPRESSION
CONTROL

## GEOLOGICAL LEGEND

REINDEER FORMATION, Aklak Member . . . . . (Tra)
MOOSE CHANNEL FORMATION, Ministicoog Member . . . . (Tmcm)
MOOSE CHANNEL FORMATION, Basal Sandstone Member . . . (Tmcb)
GEOLOGICAL BOUNDARY (approximate, assumed) . . . .
COAL SEAM TRACE (approximate) . . . . . 8
BEDDING, TOPS KNOWN (horizontal, inclined, vertical, overturned) . . . . . 10 65
BEDDING, TOPS UNKNOWN . . . . . 55
BOCANNE . . . . . 55
FAULT (approximate assumed - solid circle indicates downthrown side) . . . . . ? ?
SYNCLINE (approximate) . . . . . ?
ANTICLINE (approximate) . . . . . ?
PROPOSED DRILL HOLE (number denotes priority) . . . . . ⊙5

SCALE 1:5000

100 0 100 200 300 400 500 METRES
500 0 500 1000 1500 FEET

CONTOUR INTERVAL 5 METRE

DATE OF PHOTO JULY 1982

INDEX MAP

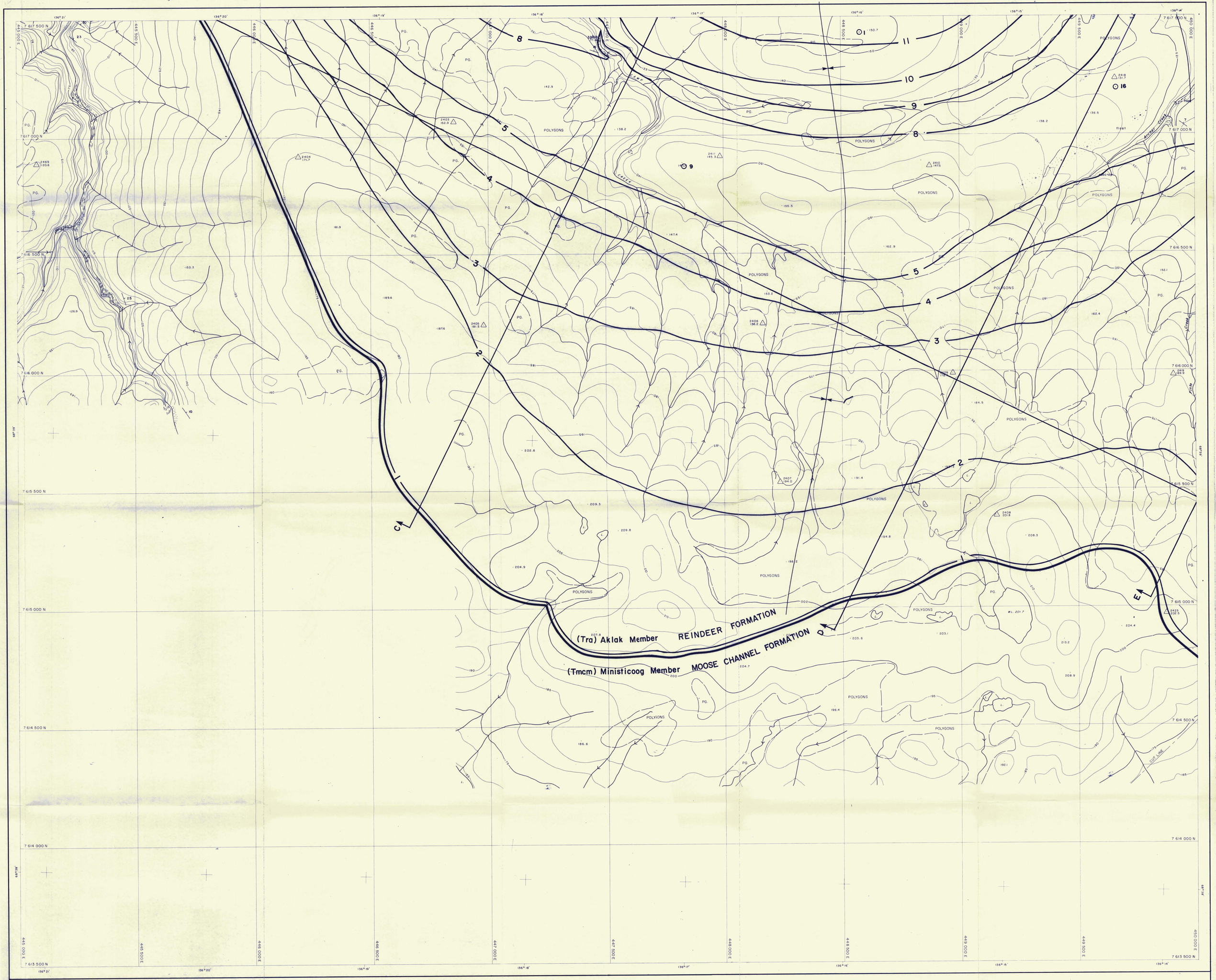
| | | |
|---|---|---|
| 1 | 2 | |
| 3 | 4 | 5 |
| 6 | 7 | 8 |

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | JUNE, 1983 |
| REVISED | |
| AUTHOR | F. B. G. |
| DRAFTED | S. K. |
| SCALE | 1:5000 |

# COAL MINE LAKE PROJECT

# GEOLOGY MAP 6




NORTH WEST SURVEY CORPORATION INTERNATIONAL LTD.

## LEGEND

| | | | |
|---|---|---|---|
| MAIN ROAD | | RIVER, LAKE | |
| SECONDARY ROAD | | INTERMITTENT RIVER | |
| TRACK OR TRAIL | | TREED AREA | |
| RAILWAY | | INDIVIDUAL TREE | |
| HEDGE FENCE | | SPOT HEIGHT | 900.1 |
| BRIDGE CULVERT | | CONTOURS | 900 |
| SWAMP | | DEPRESSION | 650 |
| UTILITY POLE | | CONTROL | |

## GEOLOGICAL LEGEND

REINDEER FORMATION, Aklak Member . . . . . (Tra)
MOOSE CHANNEL FORMATION, Ministicoog Member . . . . . (Tmcm)
MOOSE CHANNEL FORMATION, Basal Sandstone Member . . . . (Tmcb)
GEOLOGICAL BOUNDARY (approximate, assumed) . . . . . , ? ?
COAL SEAM TRACE (approximate) . . . . . 8
BEDDING, TOPS KNOWN . . . . . 10 65
( horizontal, inclined, vertical, overturned )
BEDDING, TOPS UNKNOWN . . . . . 55
BOCANNE . . . . . 50
FAULT ( approximate, assumed: solid circle indicates downthrown side ) . . . . . , ? ?
SYNCLINE (approximate) . . . . . .
ANTICLINE (approximate) . . . . . .
PROPOSED DRILL HOLE (number denotes priority) . . . . . 5

SCALE 1:5000

100 0 100 200 300 400 500 METRES

500 0 500 1000 1500 FEET

CONTOUR INTERVAL 5 METRE

DATE OF PHOTO JULY 1982

INDEX MAP

| | | |
|---|---|---|
| 1 | 2 | |
| 3 | 4 | 5 |
| 6 | 7 | 8 |

PETRO-CANADA COAL DIVISION

| | |
|---|---|
| DATE | JUNE, 1983 |
| REVISED | |
| AUTHOR | F. B. G. |
| DRAFTED | S. K. |
| SCALE | 1:5000 |

COAL MINE LAKE PROJECT

# GEOLOGY MAP 7




NORTH WEST SURVEY CORPORATION INTERNATIONAL LTD.

## LEGEND

- MAIN ROAD
- SECONDARY ROAD
- TRACK OR TRAIL
- RAILWAY
- HEDGE FENCE
- BRIDGE CULVERT
- SWAMP
- UTILITY POLE
- RIVER, LAKE
- INTERMITTENT RIVER
- TREED AREA
- INDIVIDUAL TREE
- SPOT HEIGHT
- CONTOURS
- DEPRESSION
- CONTROL

## GEOLOGICAL LEGEND

- REINDEER FORMATION, Aklak Member . . . . . (Trq)
- MOOSE CHANNEL FORMATION, Ministicoog Member . . . . . (Tmcm)
- MOOSE CHANNEL FORMATION, Basal Sandstone Member . . . (Tmcb)
- GEOLOGICAL BOUNDARY (approximate, assumed) . . . . .
- COAL SEAM TRACE (approximate) . . . . . 8
- BEDDING, TOPS KNOWN (horizontal, inclined, vertical, overturned) . . . . . 10, 65
- BEDDING, TOPS UNKNOWN . . . . . 55
- BOCANNE . . . . . bocanne
- FAULT (approximate, assumed; solid circle indicates downthrown side) . . . . . ?
- SYNCLINE (approximate) . . . . .
- ANTICLINE (approximate) . . . . .
- PROPOSED DRILL HOLE (number denotes priority) . . . . . 5

SCALE 1:5000

100 0 100 200 300 400 500 METRES

500 0 500 1000 1500 FEET

CONTOUR INTERVAL 5 METRE

DATE OF PHOTO JULY 1982

INDEX MAP

| | | |
|---|---|---|
| 1 | 2 | |
| 3 | 4 | 5 |
| 6 | 7 | 8 |

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | JUNE, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S.K. |
| SCALE | 1:5000 |

# COAL MINE LAKE PROJECT

# GEOLOGY MAP 8

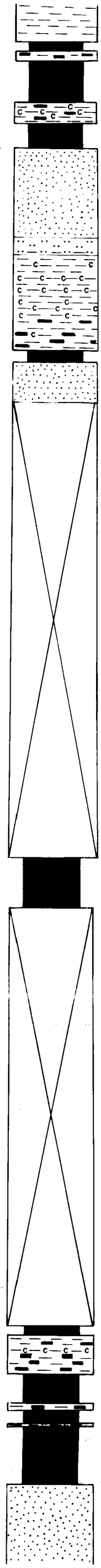
# APPENDIX D

## TRENCH LOGS (ILLUSTRATED)

| COAL | ROCK |
|---|---|
| 0.07 | |
| | 0.15 |
| 0.51 | |
| | 0.23 |
| 0.30 | |
| 0.88 | 0.38 |
| 1.26 | |

| COAL | ROCK |
|---|---|
| 0.60 | |
| 0.60 | 0.00 |
| 0.60 | |

| COAL | ROCK |
|---|---|
| 0.35 | |
| | 0.10 |
| 0.16 | |
| | 0.05 |
| 0.70 | |
| 1.21 | 0.15 |
| 1.36 | |



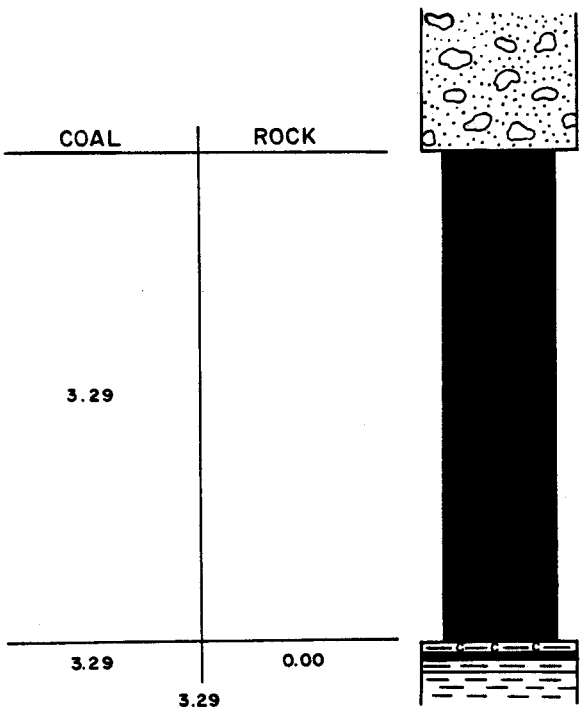

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-3

SEAM: 1



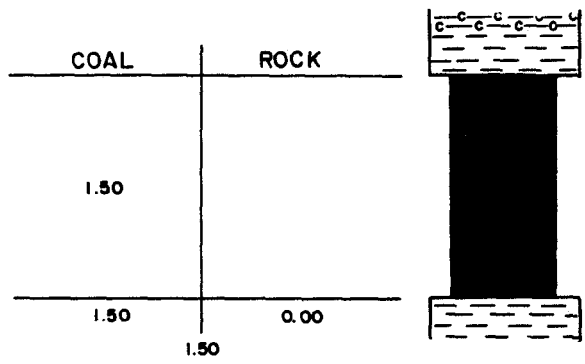

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1 : 50 |

# SEAM DETAIL

TRENCH: CML-82-T-1

SEAM: 8



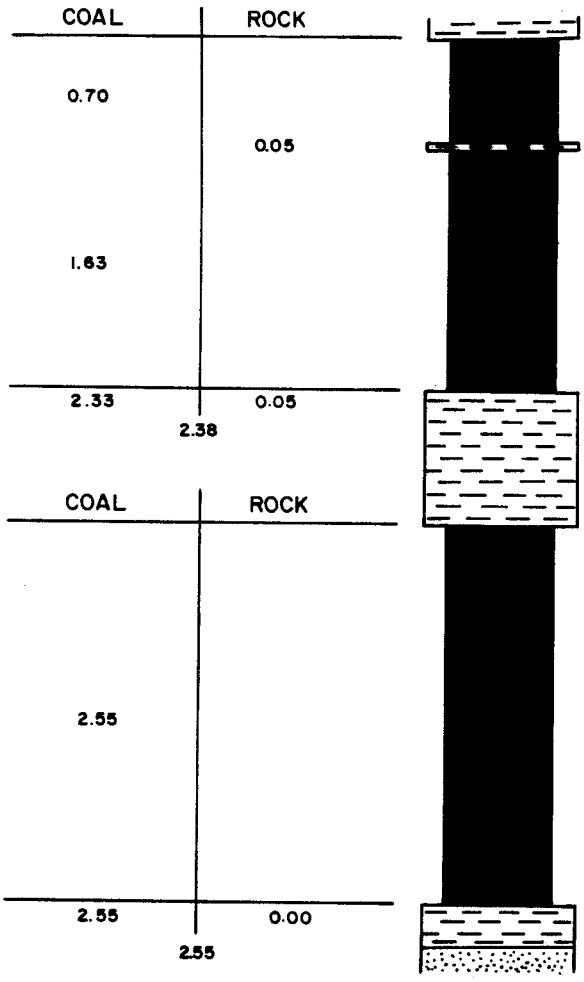

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S.K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-2

SEAM: 9



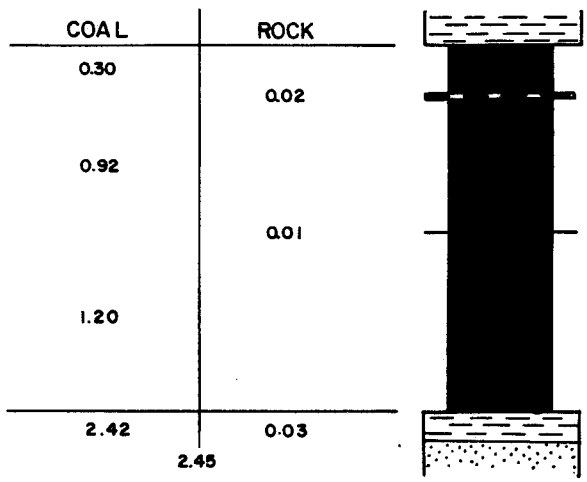

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

## TRENCH: CML-82-T-4

## SEAM: 2

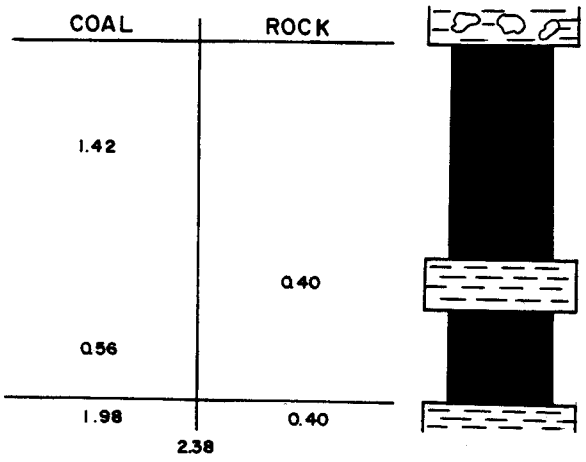



| | |
|---|---|
| PETRO-CANADA | |
| COAL DIVISION | |
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

## TRENCH CML-82-T-5

## SEAM: 2




PETRO-CANADA

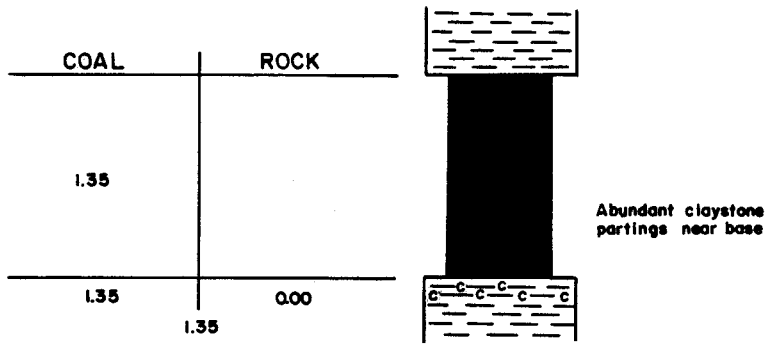
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

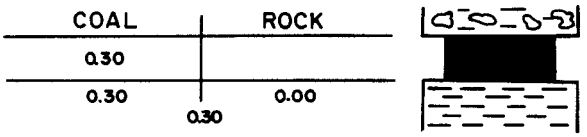
# SEAM DETAIL

TRENCH: CML-82-T-6

SEAM: 5




| | |
|---|---|
| PETRO-CANADA COAL DIVISION | SEAM DETAIL |
| DATE FEBRUARY, 1983 | TRENCH: CML-82-T-7 |
| REVISED | SEAM: 4 |
| AUTHOR F.B.G. | |
| DRAFTED S. K. | |
| SCALE 1:50 | |



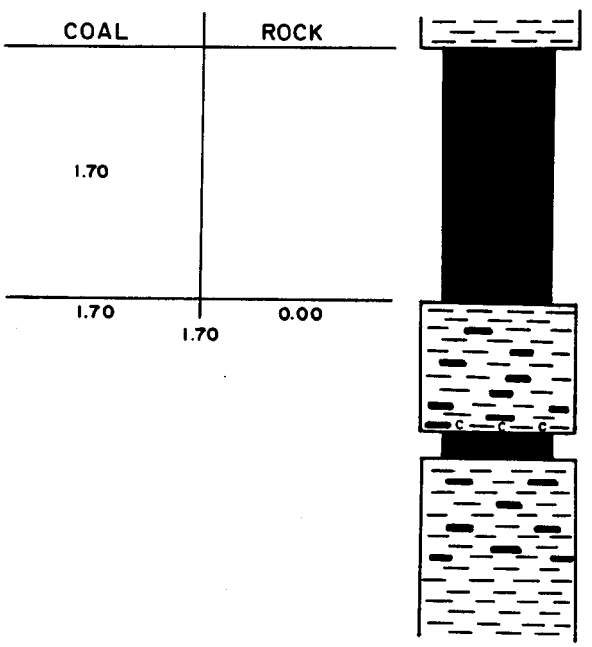

COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S.K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-9

SEAM: 7




PETRO-CANADA

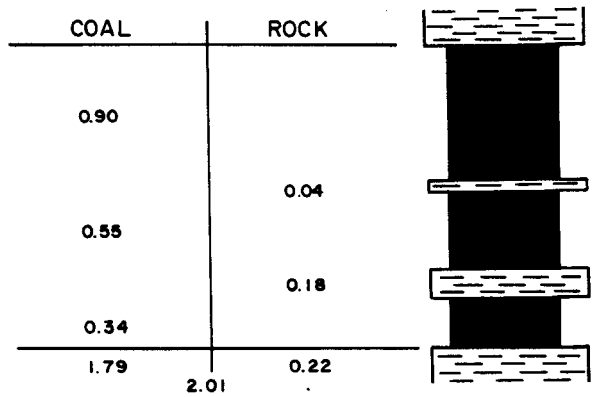
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-10

SEAM: 4




PETRO CANADA

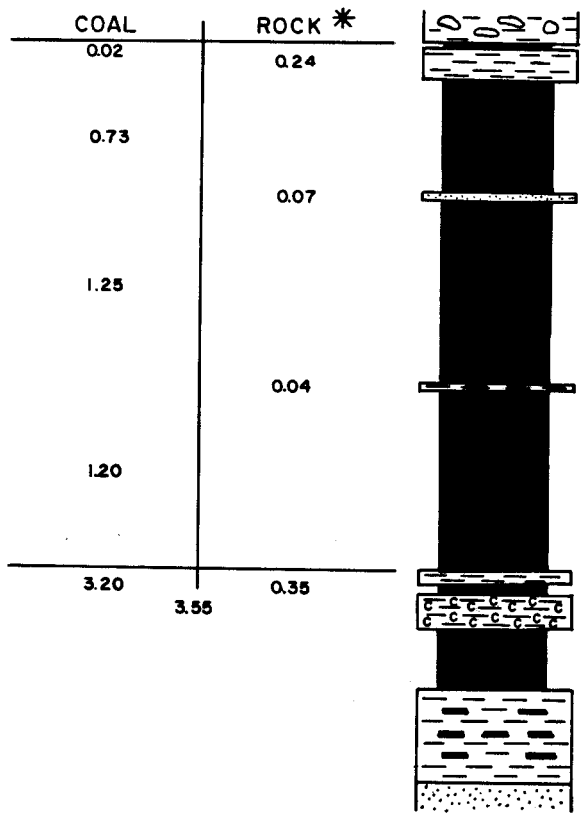
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S.K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-11

SEAM: 2



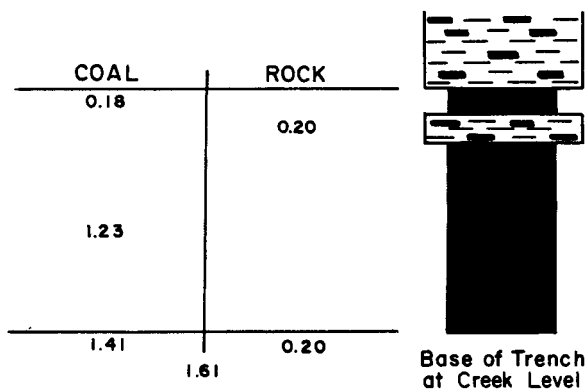

* Interval for which quality data is available

| | |
|---|---|
| PETRO-CANADA | |
| COAL DIVISION | |
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

## TRENCH: CML-82-T-12

## SEAM: 13




PETRO CANADA

COAL DIVISION

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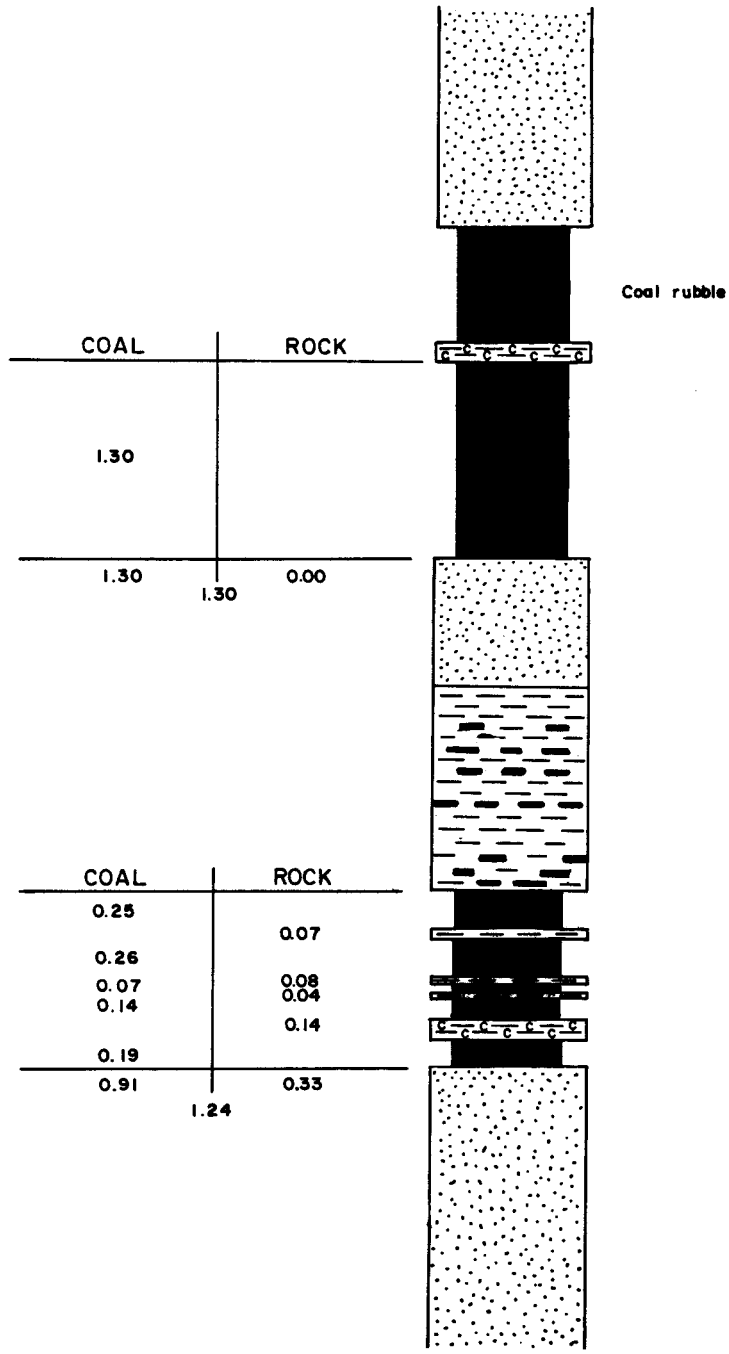
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-13

SEAM: 9




PETRO-CANADA

COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
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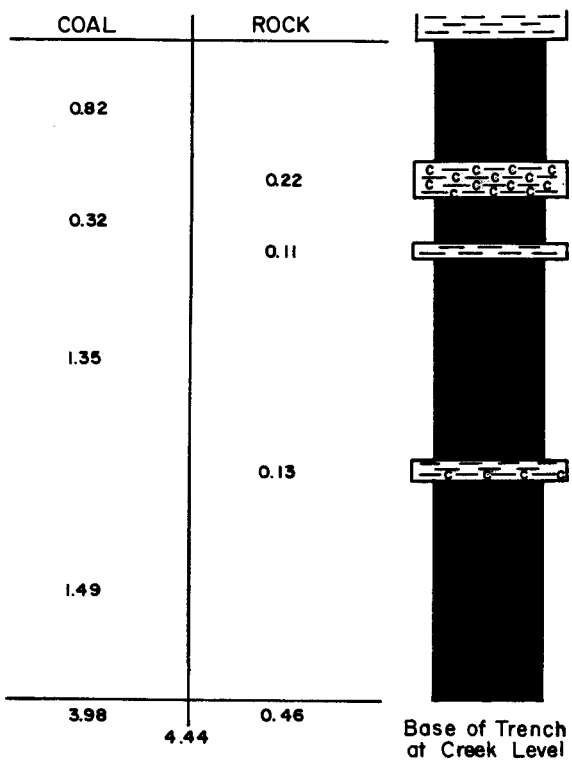
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-14

SEAM: 1



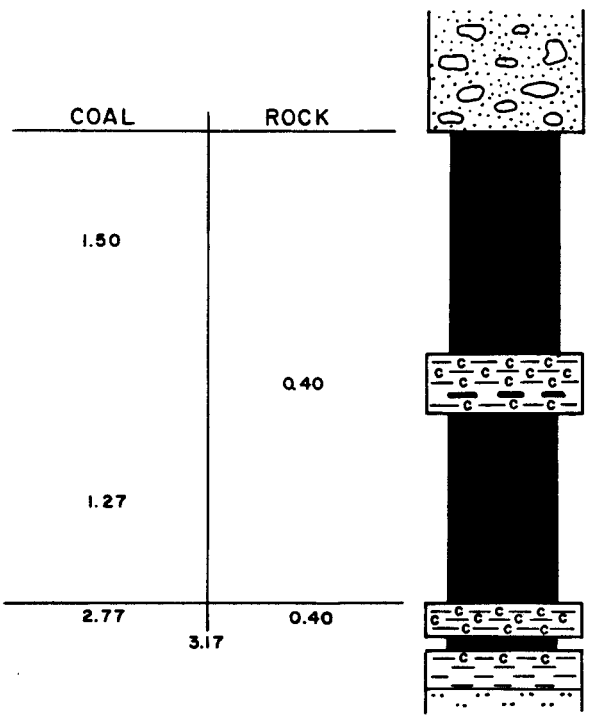

PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S.K. |
| SCALE | 1:50 |

# SEAM DETAIL

## TRENCH: CML-82-T-15

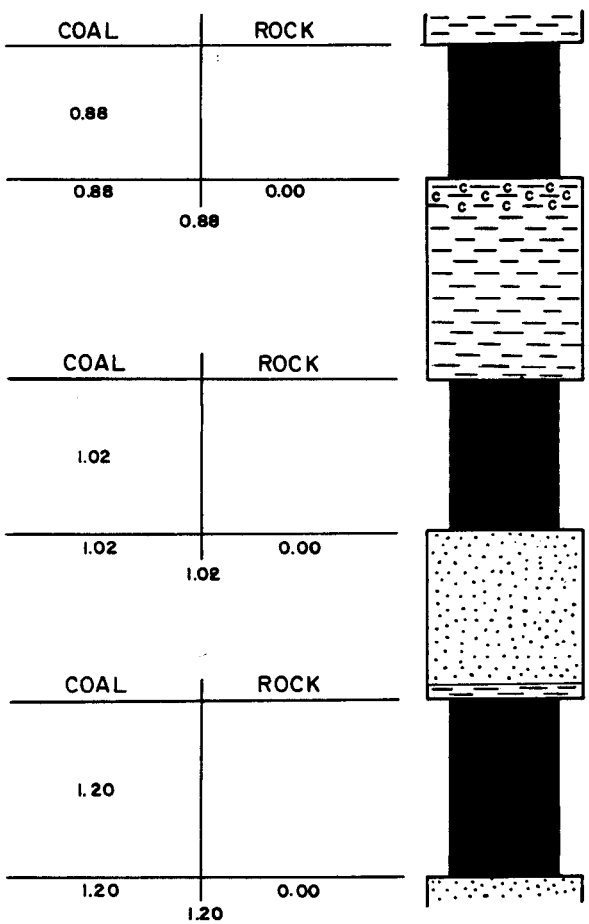
## SEAM: 9




PETRO-CANADA
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL
## TRENCH CML-82-T-16
## SEAM: 2



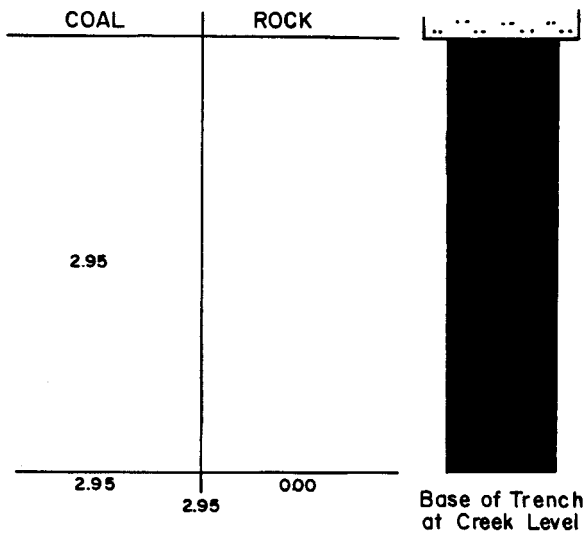

PETRO CANADA
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-17

SEAM : 3




PETRO-CANADA

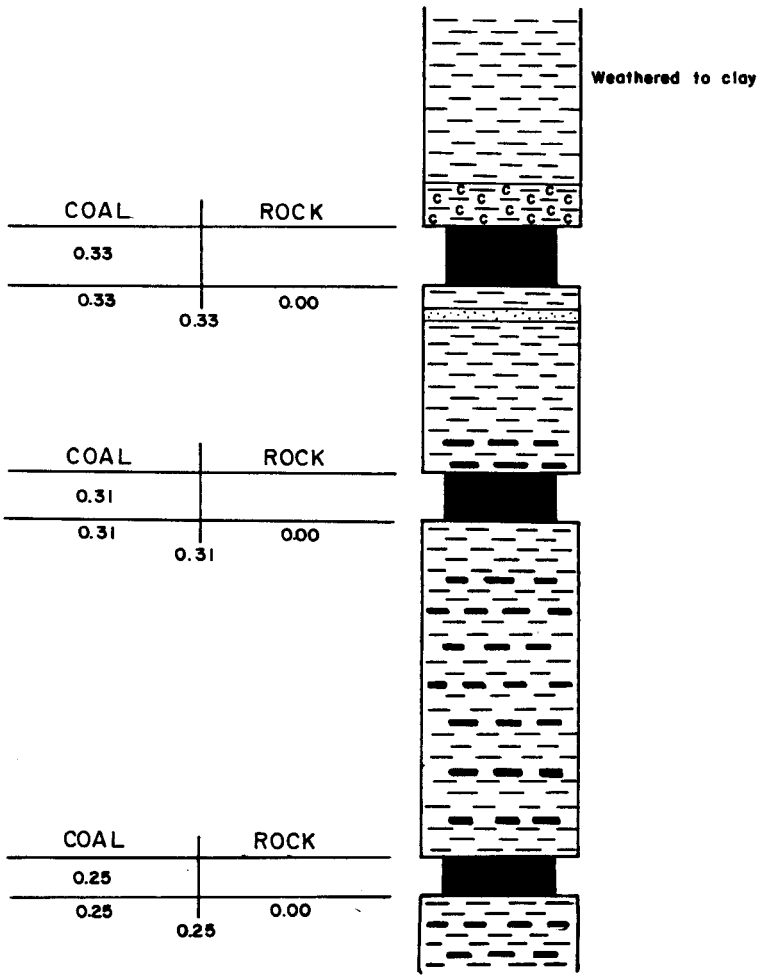
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1982 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-18

SEAM: 8




PETRO-CANADA
COAL DIVISION

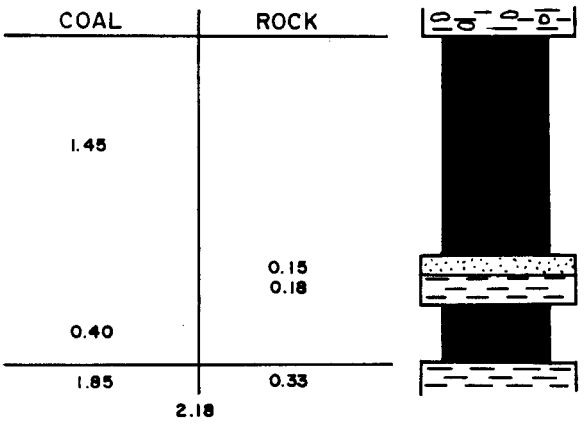
| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

## TRENCH: CML-82-T-19

## SEAM: 11

(Section Above Main Coal Zone)




PETRO-CANADA

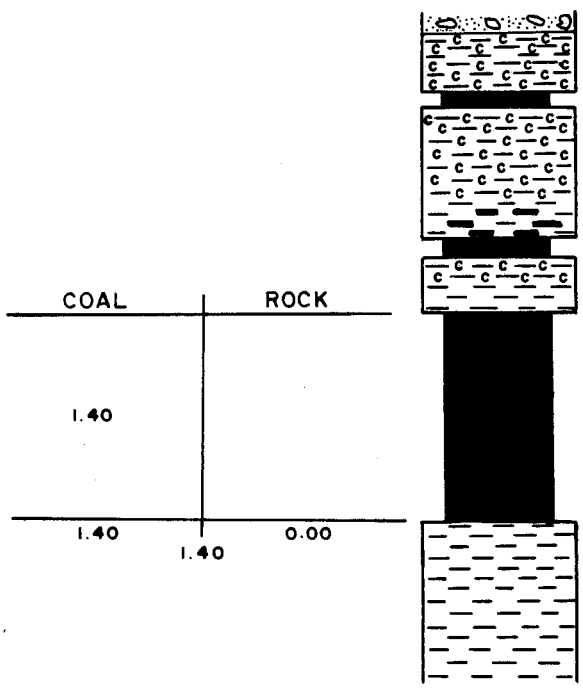
COAL DIVISION

| | |
|---|---|
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-20

SEAM: 12




| | |
|---|---|
| PETRO-CANADA | |
| COAL DIVISION | |
| DATE | FEBRUARY, 1983 |
| REVISED | |
| AUTHOR | F.B.G. |
| DRAFTED | S. K. |
| SCALE | 1:50 |

# SEAM DETAIL

TRENCH: CML-82-T-21

SEAM: 11

# APPENDIX E

# TRENCH LOGS AND MEASURED SECTIONS (WRITTEN)

PETRO-CANADA

CORE LOG - COAL DIVISION

HOLE No.: _____ SHEET No.: 1 of 5

General Stratigraphic Column, Measured Section, Coal Mine Lake Property

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: Gigliotti CORE SIZE: all measurements in meters.

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 50.00 | | | Covered occ. sst. float and csp. | | |
| | | | | 4.07 | | | Coal Seam 13 (T-12), few thin rock bands. | | |
| | | | | 5.00 | | | Sltst | | |
| | | | | 5.00 | | | Cong. | | |
| | | | | 1.00 | | | Clyst | | |
| | | | | 1.45 | | | Coal Seam 12 (T-20) | | |
| | | | | 0.15 | | | Sst. | | |
| | | | | 0.18 | | | Clyst. | | |
| | | | | 0.40 | | | Coal | | |
| | | | | 1.00 | | | Clyst | | |
| | | | | 7.00 | | | Sst. and Csp. | | |
| | | | | 7.00 | | | Cong. and c.g. Sst. | | |
| | | | | 6.00 | | | Clyst/Carb. Clyst includes several thin coal beds (10-30 cm.) | | |
| | | | | 1.40 | | | Coal Seam 11 (T-21) | | |
| | | | | 1.00 | | | Clyst | | |
| | | | | 7.00 | | | Sltst | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: _____ SHEET No.: 2 of 5

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: _____ CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 10.00 | | | Sst. v.f - m. gn., occ. clyst ibds. | | |
| | | | | 7.00 | | | Cong. chert and qtzite pebble | | |
| | | | | 2.00 | | | Coal Spoil Seam 10, thickness approximate. | | |
| | | | | 4.00 | | | Sltst | | |
| | | | | 3.60 | | | Sst. f. gn. 3.6 m @ Camp Ck., 2 m @ eastern property area | | |
| | | | | 4.40 | | | Clyst lower portion is carb. | | |
| | | | | 4.50 | | | Coal Seam 9 (T-15), split by three thin (less than 25 cm) clyst beds. | | |
| | | | | 5.00 | | | Clyst float | | |
| | | | | 8.00 | | | Sst/sltlt/clyst interbedded | | |
| | | | | 7.00 | | | Cong chert and qtzite pebble, occ. coal pebbles | | |
| | | | | 0.20 | | | Sltst 20cm exposed in T-18 | | |
| | | | | 3.30 | | | Coal Seam 8 (T-1 and T-18) | | |
| | | | | 0.60 | | | Clyst carb. with coal bands, 60 cm exposed in T-1 | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: _____ SHEET No.: 3 of 5

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: _____ CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 34.40 | | | Mostly covered | Cong., sst. exposures, clyst and coal spoil areas. Seams 6 and 7 occur within this zone. | | |
| | | | | 10.00 | | | Conglomerate | chert and qtzite peb., m.gn. sst. matrix and lenses, sandier towards base. | | |
| | | | | 1.42 | | | Coal | Seam 5 (T-6) | | |
| | | | | 0.40 | | | Clyst | | | |
| | | | | 0.56 | | | Coal | | | |
| | | | | 1.00 | | | Clyst | (T-7:Aklak Ck.) | | |
| | | | | 3.00 | | | Sltst/f.gn. sst. | lateral equivalents (sltst T-7:Aklak Ck., sst T-10:Aklak Ck.) | | |
| | | | | 1.00 | | | Clyst | | | |
| | | | | 1.53 | | | Coal | Seam 4 (T-7, T-10 average) | | |
| | | | | 2.25 | | | Clyst | coaly in part | | |
| | | | | 9.00 | | | Sst./Cong. | m.- c.gn. f.gn. sst. in Aklak Ck. area, cong./sst. in the eastern part of the property (chert-qtzite pebs). | | |
| | | | | 2.00 | | | Clyst | carb and coaly | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: _____ SHEET No.: 4 of 5

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: _____ CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.88 | | | Coal | Seam 3 (T-17) | | |
| | | | | 1.38 | | | Clyst | carb at top. | | |
| | | | | 1.02 | | | Coal | | | |
| | | | | 1.03 | | | Sst. | lt. gy., m.gn. | | |
| | | | | 0.08 | | | Clyst | | | |
| | | | | 1.20 | | | Coal | | | |
| | | | | 10.00 | | | Sltst/sst/clyst | cong. scree, sst. directly underlies seam 3 in T-17. | | |
| | | | | 1.94 | | | Coal | Seam 2 (T-4 and T-16 averages) | | |
| | | | | 0.70 | | | Clyst | carb in part | | |
| | | | | 2.33 | | | Coal | | | |
| | | | | 0.50 | | | Clyst | | | |
| | | | | 2.00 | | | Sst | resistant, ledge former, occ. sltst lenses | | |
| | | | | 13.00 | | | Sst | f.gn., flaggy weath. on bedding planes | | |
| | | | | 13.00 | | | Sst | f.gn., weath to sand, c.gn. ibds., esp. near base. | | |
| | | | | 10.00 | | | Cong | chert and qtzite pebble | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: _____ SHEET No.: 5 of 5

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: _____ CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 4.40 | | | Clyst carb in part | | |
| | | | | 0.25 | | | Coal | | |
| | | | | 0.50 | | | Clyst | | |
| | | | | 0.25 | | | Coal | | |
| | | | | 1.00 | | | Sst m.gn. | | |
| | | | | 6.90 | | | Clyst coaly, some sltst and sst. | | |
| | | | | 1.30 | | | Coal Seam 1 (T-14) | | |
| | | | | 0.84 | | | Sst | | |
| | | | | 1.28 | | | Clyst frequent coal bands. | | |
| | | | | 1.24 | | | Coal numerous clyst splits. | | |
| | | | | 2.00 | | | Sst Basal Aklak Member c.gn., salt and pepper colour, fines downward into brown, micaceous, Moose Channel Formation sandstone. | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #1 SHEET No.: 1

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.00 | | | Claystone | | |
| | | | | 0.70 | | | Coal - Seam 2, T-4 | | |
| | | | | 0.05 | | | Claystone | | |
| | | | | 1.63 | | | Coal | | |
| | | | | 0.90 | | | Claystone | | |
| | | | | 2.55 | | | Coal | | |
| | | | | 0.30 | | | Claystone | | |
| | | | | 2.00 | | | Sandstone - resistant, siltstone lenses | | |
| | | | | 22.00 | | | Sandstone - fine grained, flaggy, platy | | |
| | | | | 4.30 | | | Covered | | |
| | | | | 10.00 | | | Sandstone - fine grained and coarse grained interbeds, outcrop irregular, poorly indurated, weathered to sand | | |
| | | | | 8.50 | | | Conglomerate/Sandstone - interbedded conglomerate and conglomeratic sandstone, chert and quartzite pebbles and cobbles, poorly sorted, ironstone concretions | | |
| | | | | 1.50 | | | Covered - conglomerate rubble | | |
| | | | | 1.50 | | | Covered - claystone zone | | |

474-8016

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #1 SHEET No.: 2

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.25 | | | Claystone - somewhat carbonaceous | | |
| | | | | 0.08 | | | Coal | | |
| | | | | 0.33 | | | Coal/Claystone - ibds. 1-2 cm thick | | |
| | | | | 2.00 | | | Claystone - coaly near top | | |
| | | | | 0.07 | | | Coal | | |
| | | | | 0.15 | | | Claystone - very coaly | | |
| | | | | 0.51 | | | Coal | | |
| | | | | 0.23 | | | Claystone - carbonaceous and coaly | | |
| | | | | 0.30 | | | Coal | | |
| | | | | 1.05 | | | Sandstone - medium grained, brown | | |
| | | | | 0.24 | | | Siltstone - more clayey towards base | | |
| | | | | 1.12 | | | Claystone - coaly, carbonaceous | | |
| | | | | 0.11 | | | Coal | | |
| | | | | 0.55 | | | Sandstone - medium grained | | |
| | | | | 0.60 | | | Coal | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #1 SHEET No.: 3

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 5.00 | | | Covered - medium grained sandstone, salt and pepper (rubble) | | |
| | | | | 0.10 | | | Coal | | |
| | | | | 0.45 | | | Claystone - coaly | | |
| | | | | 0.35 | | | Coal | | |
| | | | | 0.10 | | | Claystone - coaly stringers | | |
| | | | | 0.16 | | | Coal | | |
| | | | | 0.05 | | | Claystone - coal near top | | |
| | | | | 0.70 | | | Coal - 4 cm. claystone split near base | | |
| | | | | 2.00 | | | Sandstone - medium grained, salt and pepper sandstone | | |
| | | | | | | | End of column | | |

474-80.c

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #2 SHEET No.: 1

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 7.50 | | | Conglomerate - subcrop, quartzite and chert pebbles 1-20 cm diameter, average 5 cm diameter | | |
| | | | | 1.42 | | | Coal - Seam 5, T-6 | | |
| | | | | 0.40 | | | Claystone | | |
| | | | | 0.56 | | | Coal | | |
| | | | | 1.00 | | | Claystone | | |
| | | | | 3.00 | | | Siltstone - subcrop | | |
| | | | | 1.00 | | | Claystone - subcrop | | |
| | | | | 1.35 | | | Coal - Seam 4, T-7 | | |
| | | | | 0.50 | | | Claystone | | |
| | | | | 2.00 | | | Sandstone - medium grained, light grey, salt and pepper, weathers red and yellow | | |
| | | | | 5.00 | | | Covered | | |
| | | | | 6.50 | | | Sandstone - fine grained, light grey, flaggy, platy | | |
| | | | | 11.00 | | | Covered - siltstone and claystone float | | |
| | | | | 1.00 | | | Covered - very carbonaceous claystone float | | |
| | | | | 1.00 | | | Sandstone - very fine grained sandstone, buff grey, weathers orange-brown, somewhat flaggy | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #2 SHEET No.: 2

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 6.00 | | | Covered | | |
| | | | | 20.00 | | | Sandstone - fine to medium grained, upper portion thin (few cm) bedded. Lower 2 m is thicker (½ - 1 m) bedded, has abundant crossbeds, especially high angle and a number of cherty, quartzose, pebble trains (possible lags) | | |
| | | | | 2.00 | | | Sandstone/Siltstone/Claystone - interbedded, beds 2-4 cm thick, transition zone | | |
| | | | | 6.43 | | | Claystone | | |
| | | | | 0.42 | | | Coal - Seam 1, T-8 | | |
| | | | | 0.74 | | | Claystone | | |
| | | | | 0.63 | | | Coal | | |
| | | | | 0.60 | | | Claystone | | |
| | | | | 0.17 | | | Coal | | |
| | | | | 0.14 | | | Claystone | | |
| | | | | 0.47 | | | Coal | | |
| | | | | 1.55 | | | Claystone - carbonaceous and coaly at base | | |
| | | | | 0.32 | | | Coal | | |
| | | | | 0.39 | | | Claystone/Coal | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #2 SHEET No.: 3

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | 0.22 | | | Coal | | |
| | | | | | | | | | |
| | | | | 0.66 | | | Claystone | | |
| | | | | | | | | | |
| | | | | 1.20 | | | Coal | | |
| | | | | | | | | | |
| | | | | | | | Section base at Aklak Creek | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #3 SHEET No.: 1

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 12.00 | | | Conglomerate - medium grained sandstone lenses; pebbles 0.5 to 20 cm. average 3 cm., poorly sorted, both matrix and grain supported, well rounded, mostly quartzite with some chert, greater number of larger pebbles in upper part. Unit is sandier towards base. | | |
| | | | | 15.00 | | | Covered | | |
| | | | | 3.00 | | | Sandstone - very fine grained, very thin laminae, platy, flaggy parting parallel to bedding, wavy laminae: possible soft sediment deformation, red weather, fresh tan (boccane) | | |
| | | | | 0.25 | | | Claystone - weathered, rubbly | | |
| | | | | 1.70 | | | Coal - Seam 4, T-10 | | |
| | | | | 0.88 | | | Claystone - coaly | | |
| | | | | 0.16 | | | Coal | | |
| | | | | 1.20 | | | Claystone - coaly | | |
| | | | | 2.00 | | | Sandstone - fine grained, light grey, salt and pepper, weathered laminae, bedding 20 to 50 cm thick, weathered red-brown | | |
| | | | | 7.00 | | | Covered | | |
| | | | | 4.00 | | | Covered - some coal spoil | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #3 SHEET No.: 2

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 5.00 | | | Siltstone - thinly bedded | | |
| | | | | 4.00 | | | Claystone/Siltstone - grey, 3-5 cm interbeds | | |
| | | | | 0.90 | | | Coal - Seam 2, T-11 | | |
| | | | | 0.04 | | | Claystone - weathered to clay | | |
| | | | | 0.55 | | | Coal | | |
| | | | | 0.18 | | | Claystone - light grey | | |
| | | | | 0.34 | | | Coal | | |
| | | | | 0.50 | | | Claystone - coaly in part, brown grey | | |
| | | | | 1.50 | | | Sandstone - ~~light to medium grey, weathered~~ buff grey, some Fe stain, (fine grained skree at creek) | | |
| | | | | | | | End of column | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: Strat. #4 SHEET No.: 1

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: Coal Mine Lake

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 5.00 | | | Conglomerate - quartzite/chert, 1-15 cm. pebbles, average 3 cm., matrix supported by medium grained sandstone moderately well imbricated, sub to well rounded, occasional Fe-stone bands/concretions, weather reddish | | |
| | | | | 3.00 | | | Covered - conglomerate talus | | |
| | | | | 5.00 | | | Covered - coal spoil at top | | |
| | | | | 4.00 | | | Coal - 1 meter exposed, Seam 1 | | |
| | | | | 1.50 | | | Sandstone - medium-coarse grained, light grey fresh, weathered yellow, platy weather | | |
| | | | | 4.00 | | | Covered | | |
| | | | | 1.00 | | | Sandstone - medium-coarse grained | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-1 SHEET No.: 1

DATE BEGUN: July 24/82 DATE FINISHED: July 24, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S., G.A. CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 200 | | | Overburden | | |
| | | | | 15 | | | Coal brite, weath. orange & brown esp. on the well developed cleat | | |
| | | | | 314 | | | Coal predom. brite, similar to above, less weath. | | |
| | | | | 20 | | | Clyst carb., with frequent coaly stringers | | |
| | | | | 25 | | | Coal/Clyst interbeds 50/50, interbeds up to 1.5 cm, coal is brite | | |
| | | | | | | | Clyst floor 065/8 NW | | |
| | | | | | | | End of Trench | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-2 SHEET No.: 1

DATE BEGUN: July 24, 1982 DATE FINISHED: July 24, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clyst. roof, carb., coaly | | |
| | | | | | | | | | |
| | | | 30 | | | | Clyst mud, unconsolidated | | |
| | | | | | | | | | |
| | | | 150 | | | | Coal dull, lustrous, Fe. stain on cleat | | |
| | | | | | | | | | |
| | | | 20 | | | | Clyst floor, base of cave under ice | | |
| | | | | | | | | | |
| | | | | | | | End of Trench | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-3 SHEET No.: 1

DATE BEGUN: July 30, 1982 DATE FINISHED: July 30, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., E.G. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 200 | | | Clyst coal bands near top | | |
| | | | | 7 | | | Coal dull - brite, a one cm. clyst. band near top | | |
| | | | | 15 | | | Clyst very coaly, brite coal bands, sheared | | |
| | | | | 47 | | | Coal dull with brite bands | | |
| | | | | 4 | | | Coal pulverized | | |
| | | | | 23 | | | Clyst carb and coaly | | |
| | | | | 4 | | | Coal pulverized | | |
| | | | | 23 | | | Clyst carb and coaly | | |
| | | | | 4 | | | Coal dull with brite bands | | |
| | | | | 13 | | | Coal pulverized | | |
| | | | | 13 | | | Coal brite banded, sheared | | |
| | | | | 105 | | | Sst med. grained, brown | | |
| | | | | 24 | | | Sltst clayey towards base | | |

474-80.c

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-3 SHEET No.: 2

DATE BEGUN: July 30, 1982 DATE FINISHED: July 30, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., F.G. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 60 | | | Clyst v. carb. in places, highly frac, & sheared | | |
| | | | | 35 | | | Clyst v. carb. with abndt. coal bands (i.e., rock & coal) | | |
| | | | | 5 | | | Clyst v. coaly, yellow stain | | |
| | | | | 12 | | | Clyst pulverized with abndt. coal bits | | |
| | | | | 8 | | | Coal dull with brite bands | | |
| | | | | 3 | | | Coal abndt. slty. splits | | |
| | | | | 50 | | | Sst medium grain | | |
| | | | | 540 | | | Covered interval | | |
| | | | | 60 | | | Coal dull with brite bands | | |
| | | | | 500 | | | Covered interval medium grain, salt & pepper sst. rubble | | |
| | | | | 10 | | | Coal highly bkn. | | |
| | | | | 5 | | | Clyst | | |
| | | | | 20 | | | Clyst very coaly and sheared | | |

474-80.c

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-3 SHEET No.: 3

DATE BEGUN: July 30, 1982 DATE FINISHED: July 30, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., F.G. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 20 | | | Clyst many coal stringers | | |
| | | | | 35 | | | Coal dull with brite bands | | |
| | | | | 10 | | | Clyst dark grey, coal stringers | | |
| | | | | 16 | | | Coal dull with brite bands | | |
| | | | | 5 | | | Clyst includes 1-2 cm. coal (with sideritic parting) near top | | |
| | | | | 70 | | | Coal dull, 4 cm. clyst split near base | | |
| | | | | 200 | | | Sst med. grain, salt & pepper, base of Aklak member | | |
| | | | | | | | End of Trench | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-4 SHEET No.: 1

DATE BEGUN: July 30/82 DATE FINISHED: July 30/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., L.F. CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clyst | roof | | |
| | | | | 70 | | | Coal | dull, lustrous, no cleat, metallic blue - grey lustre | | |
| | | | | 5 | | | Clyst | papery weathered | | |
| | | | | 20 | | | Coal | dull, lustrous as above | | |
| | | | | 15 | | | Coal | friable | | |
| | | | | 35 | | | Coal | brite, yellow weathered | | |
| | | | | 15 | | | Coal | dull with brite bands | | |
| | | | | 78 | | | Coal | brite, hard, thin ironstone band 3 cm from base is weathered orange | | |
| | | | | 90 | | | Clyst | lite brown, highly weathered | | |
| | | | | 180 | | | Coal | dull with brite bands, dirty | | |
| | | | | 75 | | | Coal | dull - brite, lustrous, bluish tinge, crumbles easily | | |
| | | | | 30 | | | Clyst | weathered, claylike | | |
| | | | | | | | Sst | floor | | |
| | | | | | | | | End of Trench | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-5 SHEET No.: 1

DATE BEGUN: July 30, 1982 DATE FINISHED: July 31, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., F.G. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clyst | overburden, roof (slope above trench is clyst subcrop) | | |
| | | | | 30 | | | Coal | dull with occasional brite bands, thin carb. clyst split at top | | |
| | | | | 2 | | | Clyst | orange weathered | | |
| | | | | 25 | | | Coal | brite, crumbles easily, orange weathered | | |
| | | | | 67 | | | Coal | dull with brite bands, papery splitting near top - possible carb. clyst | | |
| | | | | 1 | | | Clyst | coaly, papery splits | | |
| | | | | 50 | | | Coal | dull with brite bands, brite bands up to 1 cm. apart, clyst split (less than 1 cm) at 27 cm from top | | |
| | | | | 70 | | | Coal | brite, crumbles easily | | |
| | | | | 20 | | | Clyst | yellow weathered, med. grey fresh 145/10 NE | | |
| | | | | | | | Sst | floor, f.g., light grey, yellow weathered | | |
| | | | | | | | | End of Trench | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-6 SHEET No.: 1

DATE BEGUN: July 31, 1982 DATE FINISHED: August 4/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: _____ CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clay overburden roof | | |
| | | | | 80 | | | Coal dull - lustrous, hard, small dirt band @ 45 cm from top | | |
| | | | | 24 | | | Coal dull with brite stringers, crumbles easily | | |
| | | | | 38 | | | Coal dull - lustrous with brite stringers | | |
| | | | | 40 | | | Clyst brown/grey with papery weath., some coaly bands, one is 6 cm. of coal: dull with brite stringers 130/35 NE | | |
| | | | | 56 | | | Coal dull with brite stringers, platy; thin band of pulverized coal at base. Weath. yellow, 5 cm dirt band near base | | |
| | | | | | | | Clyst floor | | |
| | | | | | | | End of Trench | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-7 SHEET No.: 1

DATE BEGUN: July 31, 1982 DATE FINISHED: July 31, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.S., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clyst rubble, roof | | |
| | | | | 90 | | | Coal dull with brite bands, yellow and red weathered | | |
| | | | | 45 | | | Coal dull with frequent brite bands and abndt. clyst partings | | |
| | | | | 15 | | | Clyst dark grey, papery, v. carb. and coaly, floor 125/45 NE | | |
| | | | | | | | Clyst friable, brown | | |
| | | | | | | | End of Trench | | |

474-80.c

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-8 SHEET No.: 1

DATE BEGUN: August 4, 1982 DATE FINISHED: August 4, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 600 | | | Clyst | friable, dark brown/grey, recessive roof | | |
| | | | | 27 | | | Clyst | dark grey, carb. | | |
| | | | | 16 | | | Clyst | v. carb. and coaly | | |
| | | | | 42 | | | Coal | dull, hi ash %, thin ptg. parallel to bdg, generally blocky | | |
| | | | | 50 | | | Clyst | dark grey, friable, green & yellow weathered | | |
| | | | | 24 | | | Clyst | dark grey, friable, weathered yellow & orange | | |
| | | | | 63 | | | Coal | dull, blocky | | |
| | | | | 60 | | | Clyst | dark grey/brown, v. friable & recessive | | |
| | | | | 17 | | | Coal | dull, blocky | | |
| | | | | 7 | | | Clyst | dark grey, friable | | |
| | | | | 7 | | | Clyst | as above, but highly broken, almost pulverized, weathered yellow | | |
| | | | | 45 | | | Coal | brite, weathered yellow & orange | | |
| | | | | 10 | | | Clyst | v. carb. and coaly | | |
| | | | | 57 | | | Coal | brite, blocky | | |

474-80.c

PETRO CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-8 SHEET No.: 2

DATE BEGUN: Aug. 4/82 DATE FINISHED: Aug. 4/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 2 | | | Coal as above, highly frac. | | |
| | | | | 155 | | | Clyst dark brown, friable, carb. and coaly @ base | | |
| | | | | 32 | | | Coal dull with brite bands | | |
| | | | | 7 | | | Clyst dark brown, abndt. coal stringers | | |
| | | | | 4 | | | Coal brite, lensy | | |
| | | | | 28 | | | Clyst/Coal mostly clyst @ base, mostly coal @ top | | |
| | | | | 22 | | | Coal dull - lustrous | | |
| | | | | 16 | | | Clyst abundant coal ibds up to 2 cm thick. | | |
| | | | | 50 | | | Clyst abundant coal splits | | |
| | | | | 120 | | | Coal dull and brite bands | | |
| | | | | | | | Creek no bottom to seam in trench | | |
| | | | | | | | End of Trench | | |

474-80.c

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-9 SHEET No.: 1

DATE BEGUN: August 4, 1982 DATE FINISHED: August 4, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., L.F. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clay overburden roof | | |
| | | | | 30 | | | Coal dull, highly fractured, platy, poorly bedded. 155/25 NE | | |
| | | | | | | | Clyst brown/grey, weathered reddish orange, very papery, poorly bedded. | | |
| | | | | | | | floor | | |
| | | | | | | | End of Trench | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-10 SHEET No.: 1

DATE BEGUN: August 4, 1982 DATE FINISHED: August 5, 1982 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clyst | roof, dark brown, friable, weathered and rubbly | | |
| | | | | 170 | | | Coal | brite, blocky, dull - lustrous lower half<br>145/40 NE | | |
| | | | | 70 | | | Clyst | dark grey, coal stringers, dominant parting<br>parallel to bedding | | |
| | | | | 14 | | | Clyst | dark grey/brown, v. friable and highly weathered | | |
| | | | | 4 | | | Clyst | dark grey, blocky, v. coaly | | |
| | | | | 7 | | | Coal | brite, highly fractured. | | |
| | | | | 9 | | | Coal | dull, blocky | | |
| | | | | 3 | | | Clyst | grey/brown | | |
| | | | | 15 | | | Clyst | dark grey, occ. dull coal ibds up to 2 cm thick | | |
| | | | | 22 | | | Clyst | dark brown, finely bkn., coaly in middle | | |
| | | | | 80 | | | Clyst | brown, occ. coal stringers near top, some red<br>weathering,<br>floor | | |
| | | | | | | | | End of Trench | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-12 SHEET No.: 1

DATE BEGUN: August 5/82 DATE FINISHED: August 5/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., L.F. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clay | roof, overburden, grey | | |
| | | | | 2 | | | Coal | dull - lustrous | | |
| | | | | 4 | | | Clyst | brown, mud layer | | |
| | | | | 20 | | | Clyst | carb, dk. grey, papery weathered 5 cm. @ top, lower 15 cm is clay mud. | | |
| | | | | 27 | | | Coal | dull - lustrous 125/11 N.E. | | |
| | | | | 6 | | | Coal | brite, crumbles easily | | |
| | | | | 40 | | | Coal | dull - lustrous with some dull bnds. | | |
| | | | | 7 | | | Sst. | | | |
| | | | | 125 | | | Coal | dull - lustrous as above | | |
| | | | | 4 | | | Clyst | carb., lower 2 cm. are grey/brown | | |
| | | | | 120 | | | Coal | dull - lustrous as above | | |
| | | | | 7 | | | Clyst | brown | | |
| | | | | 8 | | | Coal | top 2 cm brite, remainder dull - lustrous | | |
| | | | | 23 | | | Clyst | with coal stringers | | |

474-80.c

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-12 SHEET No.: 2

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., L.F. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 40 | | | Coal dull with brite stringers, weathered orange, last 3 cm. are dull - lustrous and pulverized | | |
| | | | | 50 | | | Clyst grey, occ. coaly bands | | |
| | | | | 15 | | | Clyst brown | | |
| | | | | | | | Sst floor, f.g., orange | | |
| | | | | | | | End of Trench | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-11 SHEET No.: 1

DATE BEGUN: August 4/82 DATE FINISHED: August 5/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., L.F. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clay roof, orange weathered | | |
| | | | | 40 | | | Coal 60% dull, 40% brite, weathered yellow & orange | | |
| | | | | | | | 140/23 NE | | |
| | | | | 20 | | | Coal brite, clay dirt band 15 cm from top, approx. 5 cm thick | | |
| | | | | 30 | | | Coal bluish lustre with orange weathered, brite | | |
| | | | | 4 | | | Clay orange colour | | |
| | | | | 15 | | | Coal dull, platy, weathered yellow, yellow powder on surface | | |
| | | | | 40 | | | Coal brite, yellow weathered absent except orange & yellow weathered towards base | | |
| | | | | 18 | | | Clyst light grey | | |
| | | | | 34 | | | Coal dull with brite bands, hard, yellow weath. | | |
| | | | | | | | Clyst brown/grey, floor 155/20 NE | | |
| | | | | | | | End of Trench | | |

474-80.c

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-13 SHEET No.: 1

DATE BEGUN: August 5/82 DATE FINISHED: August 5/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 300 | | | Clyst | roof, dk. grey & dk. brown, friable, occ. coaly stringers in lower half | | |
| | | | | 65 | | | Clyst | v. carb., abundant, dull & occ. brite coal stringers, blocky, includes beds of less carb. clyst. | | |
| | | | | 69 | | | Clyst | dark brown, somewhat friable, abundant brite coal stringers | | |
| | | | | 18 | | | Coal | brite, well developed cleat, with clyst (up to 25%), disturbed bedding, possible soft sediment deformation. | | |
| | | | | 20 | | | Clyst | dark brown, friable, occ. brite coal bands | | |
| | | | | 123 | | | Coal | interbedded, dull (with brite bands) and brite with some areas high in ash. | | |
| | | | | | | | Creek | | | |
| | | | | | | | | End of Trench | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-14 SHEET No.: 1

DATE BEGUN: August 5/82 DATE FINISHED: August 5/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 150 | | | Sand | unconsolidated overburden | | |
| | | | | 75 | | | Coal | rubble | | |
| | | | | 15 | | | Clyst | coaly, dark grey | | |
| | | | | 130 | | | Coal | dull - lustrous, occasional brite bands | | |
| | | | | 47 | | | Sandstone | medium grain, poorly consolidated, numerous coal bands up to 1.5 cm thick | | |
| | | | | 37 | | | Sst | very fine grain, tan, highly fractured and broken, red weathered, becomes silty towards base | | |
| | | | | 7 | | | Clyst | dark brown and silty | | |
| | | | | 44 | | | Clyst | dark brown, very friable, ironstone towards base, coal bands | | |
| | | | | 10 | | | Clyst | dark grey, sheared with occasional brite coal bands up to 1.5 cm thick | | |
| | | | | 13 | | | Clyst | dark brown and friable | | |
| | | | | 27 | | | Clyst | dark brown, friable, brite coal interbeds (up to 3 cm thick) in top portion | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-14 SHEET No.: 2

DATE BEGUN: _____ DATE FINISHED: _____ U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 40 | | | Clyst | dark grey, frequent coal stringer, very friable in parts, concretionary siltstone near base (up to 3 cm thick) | | |
| | | | | 25 | | | Coal | dull - lustrous to brite, occasional clyst. partings up to 3 cm thick | | |
| | | | | 7 | | | Clyst | dark grey, parts parallel to bedding | | |
| | | | | 26 | | | Coal | dull - lustrous with brite bands | | |
| | | | | 8 | | | Clyst | dark grey, frequent coal stringers, parts easily parallel to bedding | | |
| | | | | 7 | | | Coal | dull to dull - lustrous with brite bands | | |
| | | | | 4 | | | Clyst | dark grey, platy parting, coaly stringers | | |
| | | | | 14 | | | Coal | mostly bright | | |
| | | | | 14 | | | Clyst | dark grey, parts parallel to bedding, very coaly | | |
| | | | | 19 | | | Coal | dull with brite bands | | |
| | | | | 400 | | | Sst. | medium grain, salt and pepper, grades downward into finer grained Moose Channel sandstone | | |
| | | | | | | | | End of Trench | | |

474-801C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-15 SHEET No.: 1

DATE BEGUN: August 6/82 DATE FINISHED: August 6/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., G.A. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clyst | roof, brown/grey | | |
| | | | | 17 | | | Coal | brite, somewhat pulverized | | |
| | | | | 10 | | | Coal | dull with brite bands, weathers yellow | | |
| | | | | 50 | | | Coal | dull lustrous, weathers orange | | |
| | | | | 5 | | | Coal | brite, hard | | |
| | | | | 22 | | | Clyst | carb., dk. grey, paperty weathered 075/9N.W. | | |
| | | | | 15 | | | Coal | dull with brite bands, weathers yellow, thin dirt band at base | | |
| | | | | 17 | | | Coal | dull, weathers yellow | | |
| | | | | 11 | | | Clyst | grey, papery weath. | | |
| | | | | 40 | | | Coal | dull, v. weathered, weathers yellow "clay-like" weathering pattern | | |
| | | | | 95 | | | Coal | dull - lustrous with brite stringers, brite orange weathering | | |
| | | | | 6 | | | Clyst | brite orange weathering | | |
| | | | | 7 | | | Clyst | carb, papery weath. | | |

474-80-10

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-15 SHEET No.: 2

DATE BEGUN: Aug. 6/82 DATE FINISHED: Aug. 6/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: J.S., G.A. CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 133 | | | Coal dull - lustrous, bluish peacock weath. 085/9N.W. | | |
| | | | | 16 | | | Coal dull with brite bands | | |
| | | | | | | | Creek | | |
| | | | | | | | End of trench | | |

474-80-C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-16 SHEET No.: 1

DATE BEGUN: August 6/82 DATE FINISHED: August 6/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., L.F. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 200+ | | | Overburden | | |
| | | | | 150 | | | Coal predominately brite, blocky, minor orange weath., becomes dull and lustrous towards base | | |
| | | | | 40 | | | Clyst dark grey, carb. with coaly stringers, prominant parting parallel to bedding, more coaly towards base | | |
| | | | | 127 | | | Coal dull with occasional brite bands, blocky, well developed cleat | | |
| | | | | 26 | | | Clyst dark grey, carb, dominant parting parallel to bedding | | |
| | | | | 7 | | | Coal dull with numerous clyst splits | | |
| | | | | 3 | | | Clyst dark grey, carb. | | |
| | | | | 19 | | | Clyst dark brown, highly weathered, pulverized | | |
| | | | | 2 | | | Clyst dark brown, friable | | |
| | | | | | | | Sltst grades downward to fg. sst. (i.e., f.g. sst. with silty upper few cm) floor | | |
| | | | | | | | End of Trench | | |

474-80.c

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-17 SHEET No.: 1

DATE BEGUN: August 7/82 DATE FINISHED: August 7/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., L.F. CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Claystone roof, dark grey 100/10 S.W., may be slumped | | |
| | | | | 46 | | | Coal dull with brite stringers | | |
| | | | | 27 | | | Coal dull - lustrous, hard | | |
| | | | | 15 | | | Coal dull with light bands | | |
| | | | | 138 | | | Claystone upper 20 cm carb., remainder brown/grey | | |
| | | | | 12 | | | Coal dull with brite stringers, orange weath. | | |
| | | | | 90 | | | Coal dull - lustrous, 7 cm dull coal with brite bands @ base | | |
| | | | | 103 | | | Sst med. grain, light brey, contains organics 095/2 SW poss. slump | | |
| | | | | 8 | | | Clyst brown/grey | | |
| | | | | 15 | | | Coal dull - lustrous | | |
| | | | | 105 | | | Coal dull with abundant brite bands, 6 cm of papery weath. coal with brite bands @ 30 cm from top | | |
| | | | | | | | Sst floor, fine grained, lite grey | | |
| | | | | | | | End of Trench | | |

474-80.C

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-20 SHEET No.: 1

DATE BEGUN: August 8/82 DATE FINISHED: August 8/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., L.F. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Clay | roof, overburden, brown with pieces of fg. sst. and coal | | |
| | | | | 65 | | | Coal | dull with brite bands, platy, bluish lustre on bedding planes | | |
| | | | | 40 | | | Coal | dull - lustrous with brite bands 085/9 N | | |
| | | | | 35 | | | Coal | brite, minor orange weath. | | |
| | | | | 5 | | | Clyst | carb., papery | | |
| | | | | 15 | | | Sst | fg., lite grey, weath. orange | | |
| | | | | 18 | | | Clyst | brown/grey | | |
| | | | | 40 | | | Coal | dull with brite bands, layer of brite coal 25 cm from top | | |
| | | | | | | | Clyst | heavy overburden, brown/grey, floor | | |
| | | | | | | | | End of Trench | | |

474-8010

PETRO-CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-21 SHEET No.: 1

DATE BEGUN: August 8/82 DATE FINISHED: August 8/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.B., L.S. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 150 | | | Overburden | bottom half coaly | | |
| | | | | 40 | | | Clyst | carb., very coaly, dark grey | | |
| | | | | 10 | | | Coal | dull, blocky, hi ash content | | |
| | | | | 50 | | | Clyst | carb., dark grey, highly broken | | |
| | | | | 33 | | | Clyst | grey/brown, friable, coaly with coal stringers | | |
| | | | | 12 | | | Coal | dull, high ash %, clyst splits, nearly carb. clyst. | | |
| | | | | 20 | | | Clyst | carb., coaly, dark grey | | |
| | | | | 18 | | | Clyst | dark grey/brown, highly weath. & broken | | |
| | | | | 21 | | | Coal | dull, high ash %, numerous clyst partings | | |
| | | | | 140 | | | Coal | dull - lustrous, blocky, some brite bands, abundant clyst partings @ top, highly broken, brite towards bottom, highly weathered @ base (brown). | | |
| | | | | 100 | | | Clyst | floor, coaly in places | | |
| | | | | | | | | End of Trench | | |

474-80-C

PETRO CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-19 SHEET No.: 2

DATE BEGUN: Aug. 8/82 DATE FINISHED: Aug. 8/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: F.G., G.A. CORE SIZE: _____

| B. C. A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 223 | | | Clyst dark brown, somewhat friable, abundant coal | | |
| | | | | | | | stringers up to a few cm in thickness, ironstone | | |
| | | | | | | | concretionary layer 108 cm. from top | | |
| | | | | 13 | | | Coal dull - lustrous, high ash %, blocky | | |
| | | | | | | | | | |
| | | | | 12 | | | Coal brite bands with thin claystone partings | | |
| | | | | | | | | | |
| | | | | 40 | | | Claystone with brite coal bands, some of the claystone | | |
| | | | | | | | is very coaly | | |
| | | | | | | | | | |
| | | | | | | | Creek | | |
| | | | | | | | | | |
| | | | | | | | End of Trench | | |

474-8010

PETRO CANADA

# CORE LOG - COAL DIVISION

HOLE No.: CML-82-T-18 SHEET No.: 1

DATE BEGUN: August 7/82 DATE FINISHED: August 7/82 U.T.M.: _____ N _____ E

BEARING: _____ ELEV. COLLAR: _____ TOTAL DEPTH: _____ COAL LICENSE: _____

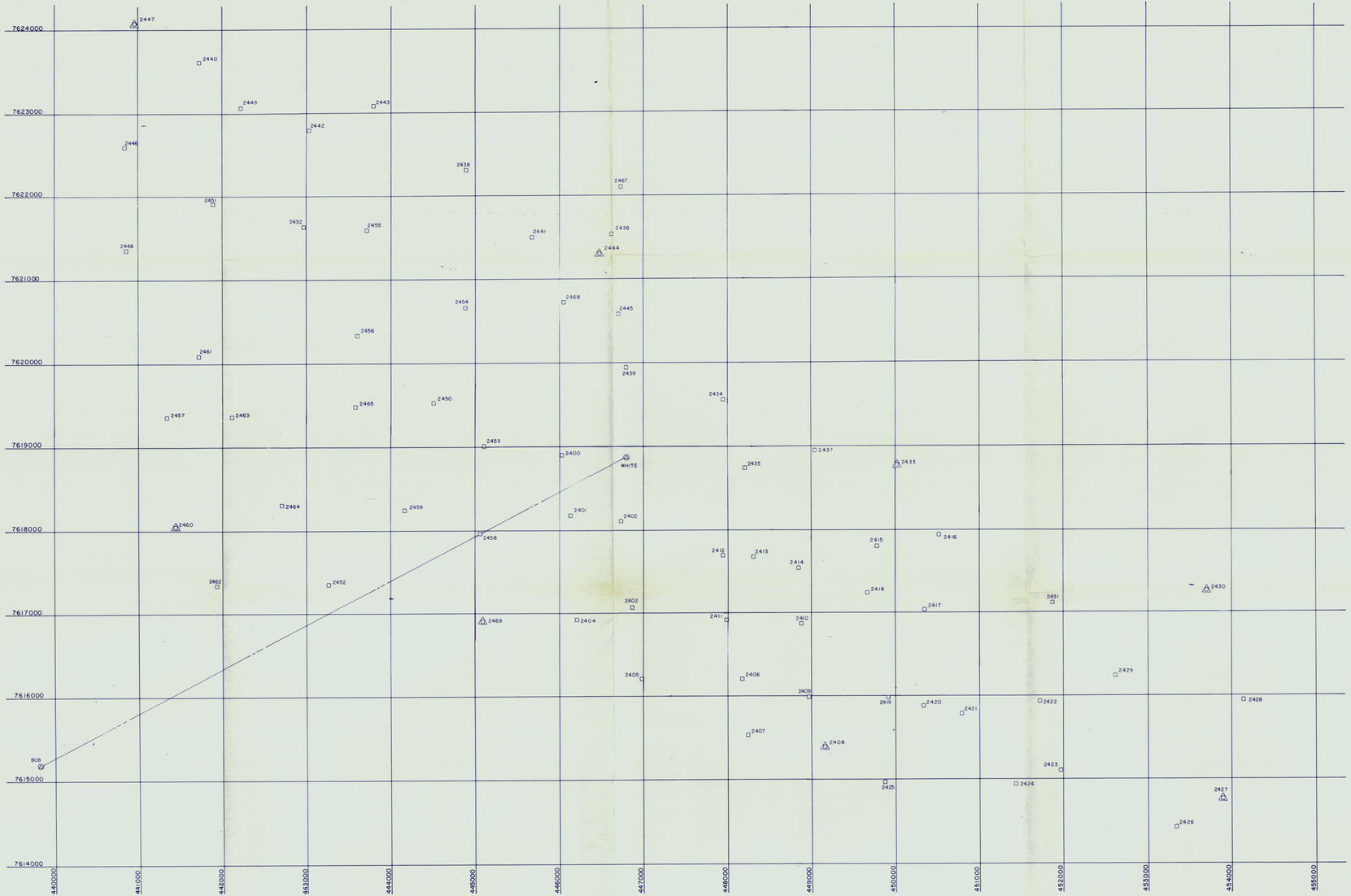
CONTRACTOR _____ HOLE ANGLE: _____ LOGGED BY: L.S., L.F. CORE SIZE: _____

| B.C.A. | UNIT From | UNIT To | UNIT THICKNESS App. | UNIT THICKNESS True | SAMPLE NUMBER | MARKER | DESCRIPTION | RECOVERY m. | RECOVERY % |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Siltstone roof, grey/brown 060/10 N.W. | | |
| | | | | 295 | | | Coal brite, weath. orange, blue bituminous lustre, hard, massive unit. Top 7 cm is dull with brite bands. Seam continues down into creek. | | |
| | | | | | | | Creek | | |
| | | | | | | | End of Trench | | |

474-8010

# APPENDIX F

## SURVEY CONTROL MAP




# PETRO CANADA COAL DIVISION

COAL MINE LAKE

NORTHWEST TERRITORIES

LATITUDE 68° 40' , LONGITUDE 136° 25' APPROX.

PLAN SHOWING LOCATION OF

# SURVEY STATIONS

SURVEYED JULY 10th to 19th , 1982

SCALE : 1 : 20 000

METRES 1000 500 250 0 500 1000

U.T.M. CO-ORDINATES
ZONE 8 CENTRAL MERIDIAN 135°

| STATION | NORTHING | EASTING | ELEVATION |
|---|---|---|---|
| WHITE | 7618860.47 | 446791.32 | 132.6 |
| 2400 | 7618831.39 | 446026.65 | 109.0 |
| 2401 | 7618172.15 | 446127.38 | 117.7 |
| 2402 | 7618104.53 | 446725.82 | 137.9 |
| 2403 | 7617062.49 | 446855.17 | 152.9 |
| 2404 | 7616919.69 | 446195.10 | 171.7 |
| 2405 | 7616204.28 | 446978.00 | 181.5 |
| 2406 | 7616206.43 | 448164.66 | 158.2 |
| 2407 | 7615933.74 | 448255.38 | 194.0 |
| 2408 | 7615388.16 | 449154.58 | 201.8 |
| 2409 | 7615931.98 | 448969.86 | 178.7 |
| 2410 | 7616870.48 | 448873.18 | 147.5 |
| 2411 | 7616913.35 | 447984.73 | 145.1 |
| 2412 | 7617696.16 | 447938.27 | 136.0 |
| 2413 | 7617667.12 | 448307.23 | 142.8 |
| 2414 | 7617537.25 | 448843.18 | 148.3 |
| 2415 | 7617795.90 | 449775.15 | 121.1 |
| 2416 | 7617931.18 | 450516.50 | 114.7 |
| 2417 | 7617030.83 | 450341.82 | 128.9 |
| 2418 | 7617235.83 | 449662.46 | 131.7 |
| 2419 | 7615982.00 | 449905.16 | 169.9 |
| 2420 | 7615881.57 | 450325.58 | 176.9 |
| 2421 | 7615787.68 | 450790.63 | 171.2 |
| 2422 | 7615929.76 | 451713.90 | 137.5 |
| 2423 | 7615101.58 | 451970.34 | 160.1 |
| 2424 | 7614938.52 | 451428.39 | 184.5 |
| 2425 | 7614972.88 | 449871.18 | 202.2 |
| 2426 | 7614428.81 | 453334.86 | 104.6 |
| 2427 | 7614761.83 | 453887.95 | 79.5 |
| 2428 | 7615940.25 | 454132.87 | 13.5 |
| 2429 | 7618232.94 | 452606.08 | 110.9 |
| 2430 | 7617262.31 | 453697.87 | 9.0 |
| 2431 | 7617119.74 | 451861.05 | 86.5 |
| 2432 | 7621835.02 | 442970.12 | 108.4 |
| 2433 | 7618775.48 | 450014.36 | 86.4 |
| 2434 | 7619558.11 | 447944.53 | 94.9 |
| 2435 | 7618740.33 | 448208.83 | 110.4 |
| 2436 | 7621536.68 | 446614.41 | 2.6(AOIT) |
| 2437 | 7618954.02 | 449242.06 | 90.0 |
| 2438 | 7620308.71 | 444888.53 | 61.4 |
| 2439 | 7619943.82 | 446791.33 | 94.3 |
| 2440 | 7625811.18 | 441721.09 | 96.8 |
| 2441 | 7623500.13 | 445672.07 | 53.8 |
| 2442 | 7625798.01 | 443580.15 | 82.2 |
| 2443 | 7624310.47 | 443752.88 | 80.6 |
| 2444 | 7622370.68 | 445659.62 | 77.5 |
| 2445 | 7623588.76 | 446826.54 | 107.9 |
| 2447 | 7624079.86 | 440859.07 | 93.9 |
| 2448 | 7621360.77 | 440850.022 | 113. |
| 2449 | 7625063.57 | 442324.44 | 94.0 |
| 2450 | 7619517.50 | 444501.83 | 109.5 |
| 2451 | 7621816.40 | 441984.68 | 103.7 |
| 2452 | 7617545.44 | 443847.53 | 145.6 |
| 2453 | 7618398.45 | 445701.02 | 116.2 |
| 2454 | 7620567.37 | 444878.76 | 94.4 |
| 2455 | 7621583.68 | 443711.24 | 103.1 |
| 2456 | 7620338.85 | 443593.87 | 101.6 |
| 2457 | 7619355.43 | 441338.27 | 144.2 |
| 2458 | 7617980.21 | 445054.58 | 123. |
| 2459 | 7618241.50 | 444154.94 | 140.6 |
| 2460 | 7618048.48 | 441435.79 | 130.8 |
| 2461 | 7620088.88 | 441719.43 | 109.7 |
| 2462 | 7617339.80 | 441926.21 | 171. |
| 2463 | 7619359.89 | 442108.99 | 142.4 |
| 2464 | 7618305.95 | 442790.05 | 158.8 |
| 2465 | 7619477.25 | 443580.59 | 110.1 |
| 2467 | 7622103.62 | 446729.00 | 5 |
| 2468 | 7620726.34 | 446041.09 | 77.3 |
| 2469 | 7616892.43 | 445085.75 | 120.6 |

## LEGEND

□ - Denotes Iron Bar & 2 x 2 x 4 ft. Wooden Post placed.

△ - Denotes Station used for photo control.

Elevation Datum : Sta. 2467 = 0.50 m derived from water level on Mackenzie Delta July 19/82.

HOSFORD IMPEY WELTER & ASSOCIATES LTD.
201 10712 - 100th STREET
GRANDE PRAIRIE - ALBERTA

| Drawn by: sgi 3/08/82 | FILE NO. 821024 |
|---|---|
| Checked by: | |